U.S. DEPARTMENT OF COMMERCE
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PB-272 390

# Performance Evaluation of Existing Lagoons Peterborough, New Hampshire

JBF Scientific Corp, Wilmington, Mass

Prepared for

Municipal Environmental Research Lab, Cincinnati, Ohio Wastewater Research Div

Aug 77

PB 272 390

EPA-600/2-77-085
August 1977

Environmental Protection Technology Series

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PB272390

## TECHNICAL REPORT DATA

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| | |
|---|---|
| 1 REPORT NO. EPA-600/2-77-085 | 3 RECIPIENT'S ACCESSION NO. |
| 4 TITLE AND SUBTITLE "Performance Evaluation of Existing Lagoons, Peterborough, New Hampshire" | 5 REPORT DATE August 1977 (Issuing Date) |
| | 6 PERFORMING ORGANIZATION CODE |
| 7 AUTHOR(S) Stuart F. Bowen | 8 PERFORMING ORGANIZATION REPORT NO. |
| 9 PERFORMING ORGANIZATION NAME AND ADDRESS JBF Scientific Corporation 2 Jewel Drive Wilmington, Massachusetts 01887 | 10 PROGRAM ELEMENT NO. 1BC611 |
| | 11 CONTRACT/GRANT NO. 68-03-2062 |
| 12 SPONSORING AGENCY NAME AND ADDRESS Municipal Environmental Research Laboratory--Cin.,OH Office of Research & Development U. S. Environmental Protection Agency Cincinnati, Ohio 45268 | 13 TYPE OF REPORT AND PERIOD COVERED Final - 1974-1976 |
| | 14 SPONSORING AGENCY CODE EPA/600/14 |

15 SUPPLEMENTARY NOTES
Project Officer - Ronald F. Lewis (513) 684-7644

16 ABSTRACT

Although wastewater treatment lagoons are used extensively, little operational data is currently available for evaluating the performance capabilities of lagoons. This report presents data gathered during a one-year period of monitoring the lagoon system at Peterborough, New Hampshire, and compares the treatment plant performance to design loading rates and the federal Secondary Treatment Effluent Standards.

The lagoon system performed very well with excellent removals of suspended solids and fecal coliform bacteria. $BOD_5$ removal was excellent except for four months during the winter when anaerobic conditions occurred under the ice cover and soluble $BOD_5$ levels rose substantially. As a result of this study, it was recommended that induced-air aeration be installed in one of the ponds to decrease the concentration of soluble $BOD_5$ and thus meet the federal standards. Other chemical and physical parameters were monitored in the sampling program and the data is presented in the report.

17 KEY WORDS AND DOCUMENT ANALYSIS

| a DESCRIPTORS | b IDENTIFIERS/OPEN ENDED TERMS | c COSATI Field/Group |
|---|---|---|
| *Lagoons (ponds)<br>*Performance evaluation<br>*Design criteria<br>Waste treatment<br>Chemical analysis<br>Physical tests | | 13B |

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| | | |
|---|---|---|
| 18 DISTRIBUTION STATEMENT Release to public | 19 SECURITY CLASS (This Report) Unclassified | 21 NO. OF PAGES 188 |
| | 20 SECURITY CLASS (This page) Unclassified | 22 PRICE PC $10.6 / MF $3.00 |

EPA Form 2220-1 (9-73)

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August 1977

# PERFORMANCE EVALUATION OF EXISTING LAGOONS, PETERBOROUGH, NEW HAMPSHIRE

by

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Contract No. 68-03-2062

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# FOREWORD

The Environmental Protection Agency was created because of increasing public and government concern about the dangers of pollution to the health and welfare of the American people. Noxious air, foul water, and spoiled land are tragic testimony to the deterioration of our natural environment. The complexity of that environment and the interplay between its components require a concentrated and integrated attack on the problem.

Research and development is that necessary first step in problem solution and it involves defining the problem, measuring its impact, and searching for solutions. The Municipal Environmental Research Laboratory develops new and improved technology and systems for the prevention, treatment, and management of wastewater and solid and hazardous waste pollutant discharges from municipal and community sources, for the preservation and treatment of public drinking water supplies, and to minimize the adverse economic, social, health, and aesthetic effects of pollution. This publication is one of the products of that research; a most vital communications link between the researcher and the user community.

As part of these activities, this case history report was prepared to make available to the sanitary engineering community a full year of operating and measured performance data for a three-cell facultative wastewater treatment lagoon system.

Francis T. Mayo, Director
Municipal Environmental Research
Laboratory

## ABSTRACT

Wastewater treatment lagoons have found extensive use particularly in smaller forms. However, little operational data is currently available to form a basis for evaluating the performance capabilities of lagoons. This report presents data gathered during a one year period of monitoring the lagoon system at Peterborough, New Hampshire, and compares treatment plant performance to design loading rates and the Federal Secondary Treatment Standards. The treatment system was found to perform very well. Removal of suspended solids and fecal coliform were always excellent. Biochemical oxygen demand removal was excellent except for four months during the winter when anaerobic conditions occurred under the ice cover and soluble BOD levels rose substantially. During the winter, the pH of the effluent also was low due to large dosing of chlorine to maintain a residual. In addition to these parameters, many others were monitored and are presented both in summary form and in complete listings of all data gathered during the study. As a result of the study it was recommended that induced-air aeration be installed in one of the ponds to decrease the concentration of soluble BOD and thus meet the Federal Standards.



This report was submitted in fulfillment of Contract No. 68-03-2062, by JBF Scientific Corporation, under the sponsorship of the U.S. Environmental Protection Agency.

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# SECTION 1

# INTRODUCTION

Waste treatment lagoons have been used in this country since the turn of the century. In general, observations have shown that lagoons are an effective and relatively inexpensive process having best application to small towns in which the large area requirements can be met. It has only been within the last 25 years that attempts have been made to provide a rational basis for pond design. In the last two decades the virtues of oxidation lagoons have increasingly been recognized so that today the U.S. has approximately 4000 lagoons treating domestic wastewater.

The Federal Water Pollution Control Act Amendments of 1972 have established the minimum performance requirements for public owned wastewater treatment works. By July 1977 publicly owned treatment works must meet effluent limitations based on secondary treatment. In attempts to determine the performance capabilities of oxidation lagoons it has been found that very little useful operational data exists to form a basis for evaluating the performance capabilities of lagoons.

It was the aim of this program to document and evaluate the performance of a well designed and operated lagoon system in Peterborough, New Hampshire. This work was undertaken by JBF Scientific Corporation for the U.S. Environmental Protection Agency. Dr. Stuart P. Bowen was the project director. The success of this project was made possible through the cooperation of John Isham, Town Manager of Peterborough, and by the conscientious effort of Tom Weeks, the Peterborough wastewater treatment plant operator who assisted in the conduct of the work.

# SECTION 2

# CONCLUSIONS

Wastewater treatment lagoons offer a promising treatment method for small towns and industries because the process is relatively inexpensive to construct, easy to operate, and generally provides a high level of treatment. This report presents data on the operation of a lagoon system at Peterborough, New Hampshire, and compares pollutant removal with Secondary Treatment Standards set by the U. S. Environmental Protection Agency as authorized by the Federal Water Pollution Control Amendments of 1972.

The principal conclusions resulting from this study are the following:

1. In general, the Peterborough wastewater treatment plant performed very well during this 12-month study. Removal of suspended solids and fecal coliform were always excellent. BOD removal was excellent except during the winter when anaerobic conditions existed under the ice cover on the ponds.

2. The Peterborough plant, when compared to its design loading rates, is underloaded both hydraulicly and in BOD loading. This may at least in part, account for the high level of treatment observed.

3. The Federal Secondary Treatment Standards for removal of suspended solids and fecal coliform were consistently met. The standard for BOD removal was exceeded during the winter for approximately 11 weeks. During that time the total BOD concentration in the effluent averaged about 52 mg/l and the soluble BOD averaged about 45 mg/l. Percent removal of total BOD fell to about 60 percent, while the soluble BOD concentration in the effluent exceeded that in the influent by about 10 percent. Anaerobic conditions in the ponds caused by the ice cover were responsible for the drop in treatment efficiency. Also during this time the effluent pH fell below 6.0 because of the very high chlorine dose required to meet the requirement of maintaining a chlorine residual in the effluent.

4. Measurement of plant influent and effluent flow rates showed that about 27 percent water loss occurred presumably due to seepage into the ground.

5. The dissolved oxygen concentration in the effluent was generally below 2 mg/l, and during the winter was essentially zero.

6. Chemical oxygen demand removal closely paralled BOD removal in that good removal was accomplished during most of the year, but during the winter both soluble and total COD values rose substantially.

7. Nitrogen species and phosphorus were measured. TKN and ammonia nitrogen values in the effluent rose during the winter and nitrate nitrogen decreased. Nitrite nitrogen was generally below the detection limit of 0.1 mg/l. Removal of total phosphorus was approximately 10 percent for the year.

8. Effluent alkalinity values prior to chlorination showed a distinct seasonal trend with the lowest values occurring during the summer and concentrations twice as high during the winter.

9. Algae measurement was very difficult and generally unsuccessful. It is not believed that any useful algae data were collected.

10. A chlorine residual of 2.0 mg/l was maintained except when equipment malfunctions occurred. However, during the winter the chlorine demand rose to 40 to 50 mg/l which caused a low pH in the effluent.

# SECTION 3

## RECOMMENDATIONS

Intensive monitoring of the Peterborough, New Hampshire, wastewater treatment plant showed that in general the plant was highly efficient. However, some aspects of the plant's performance should be improved. With the aim of upgrading the treatment plant, the following recommendation is made:

> BOD removal during the winter must be improved. The consistently high level of performance occurring during other parts of the year indicates that the only problem is one of insufficient oxygen in the ponds when the ice cover has formed. This problem could be alleviated in a number of ways, but probably the solution which best combines efficiency and economy would be an induced-air aeration system which would both supply necessary oxygen and probably could prevent ice formation on at least a portion of the pond surface. The quick recovery of the treatment system after melting the ice suggests that the soluble BOD is readily oxidizable, and therefore perhaps only one pond would need to be aerated and then only for a few months each year. If kept aerobic the Peterborough system should be readily able to meet the Standards.

It is therefore recommended that a study be undertaken to:

1. Select the optimum aeration equipment for the Peterborough, New Hampshire, wastewater treatment system.

2. Install that equipment.

3. Monitor the treatment system through a winter to demonstrate that the seasonally aerated pond system can meet the Secondary Treatment Standards.

Demonstration of this system would provide guidance for others faced with the problem of designing a pond system to operate efficiently when ice will cover the pond for several months of the year.

## SECTION 4

## DESCRIPTION OF PETERBOROUGH TREATMENT SYSTEM

The site selected for this study was the Peterborough, New Hampshire, wastewater treatment lagoon system. Peterborough is located in southern New Hampshire, approximately 16 kilometers (10 miles) north of the Massachusetts border, 40 kilometers (25 miles) west of Nashua, New Hampshire, and 100 kilometers (60 miles) from the Atlantic Ocean, as shown in Figure 1. The temperature has a wide range both daily and annually. Normal summer daytime readings are approximately 20-27°C (68-81°F). Summer nighttime minimums are about 10°C (50°F). Winters are moderately cold with an average January daily maximum of 1°C (33°F) and a minimum of -10°C (13°F). Precipitation is spread evenly throughout the year with an annual average of 104 cm (41 inches).

The Peterborough wastewater treatment system consists of three ponds having a total surface area of 8.3 hectares (21 acres). A site and piping layout sketch is shown as Figure 2. Photographs of the lagoon system are shown as Figure 3. The treatment system was designed in early 1968 by Camp, Dresser, and McKee of Boston, Massachusetts, and constructed shortly thereafter.

Wastewater is pumped a few hundred yards from the pumping station to a distribution structure. Although the piping arrangement will allow other flow patterns, the ponds have generally been run in series with the flow passing from Pond No. 1, to Pond No. 2, and then to Pond No. 3. The effluent from Pond No. 3 is collected in an effluent structure and transported by gravity sewer back to the pumping station where it is chlorinated and discharged to the Contoocook River. Since a feedback chlorination control system was not provided, the chlorination dose is determined by setting the effluent weir to provide a constant flow and chlorinating at a constant dose. The dosage criteria is to obtain a chlorine residual leaving the chlorination chamber of 2.0 mg/l.

The design rationale was an areal loading basis of 19.6 kg BOD/ha/day (17.5 lb BOD/acre/day) in 1968 to be increased as population increased to a loading of 39.2 kg BOD/ha/day (35 lb BOD/acre/day) in the year 2000. The total initial BOD load was designed to be 227 kg/day (500 lb/day). The initial flow was considered to average 1.9 mil l/day (0.5 mgd) with a maximum of 8.1 mil l/day (2.14 mgd). At the design 1.2 meter (4 foot) water depth the detention time would be 57 days. In the year 2000 the detention time was estimated to be 35 days. The ponds are not aerated. The population served is 2200 persons.

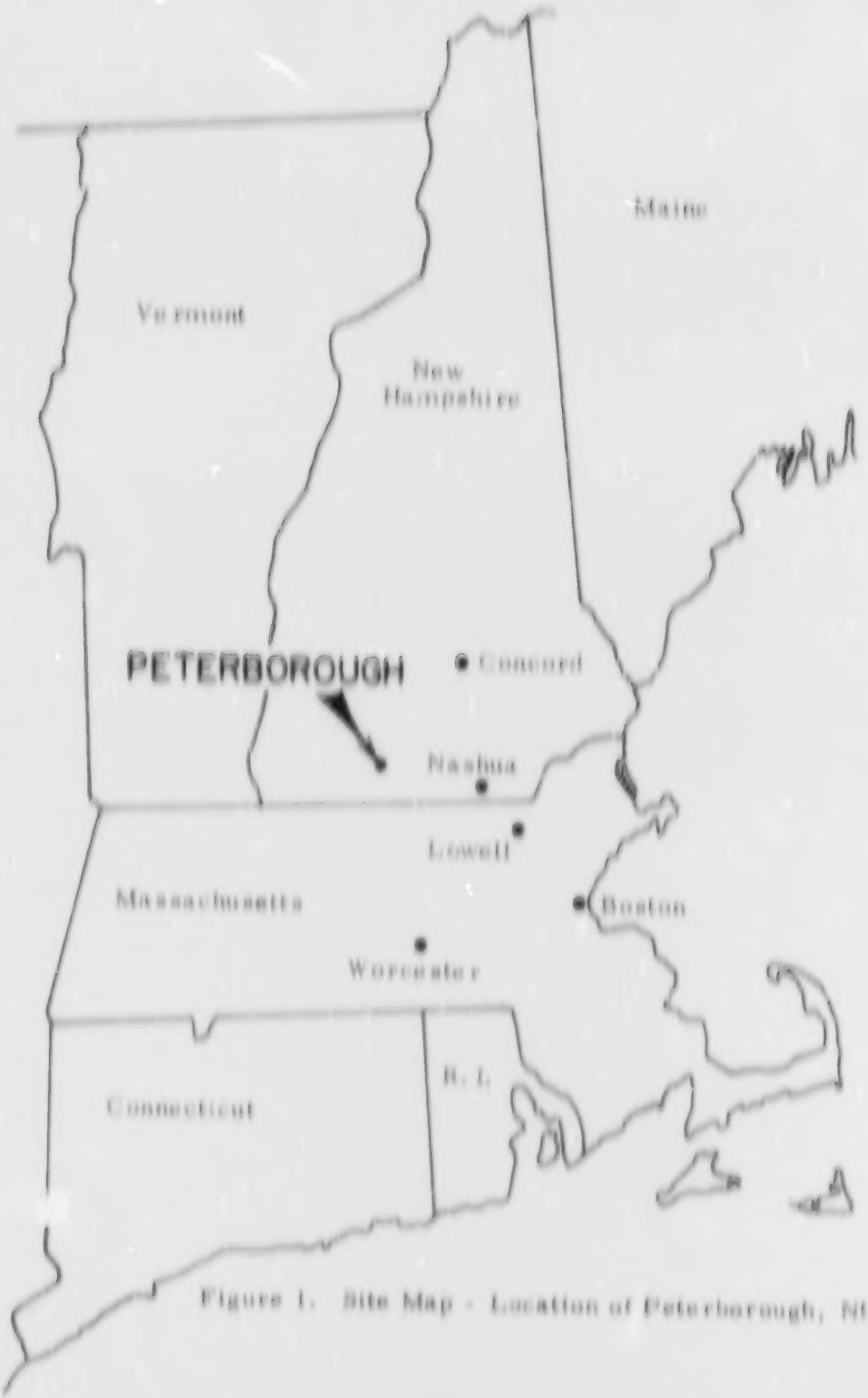



Figure 1. Site Map - Location of Peterborough, NH.

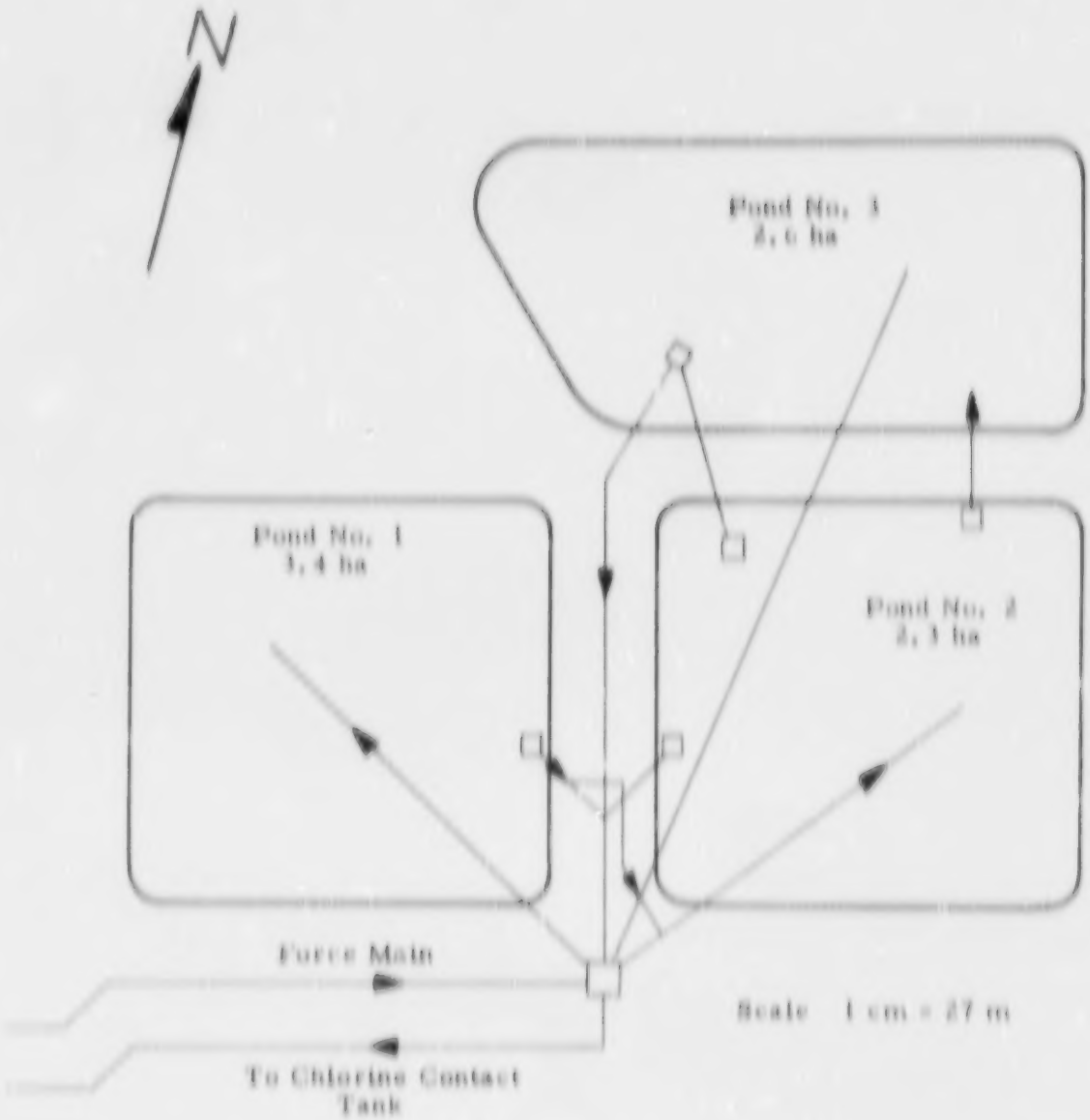
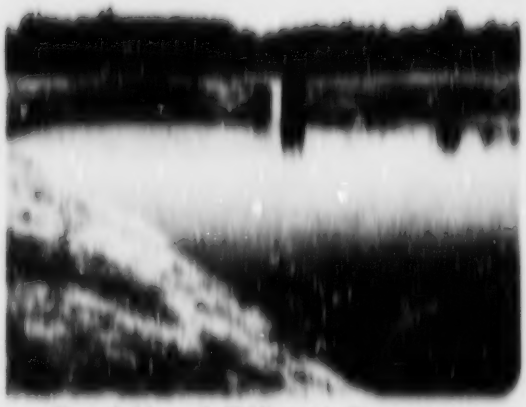
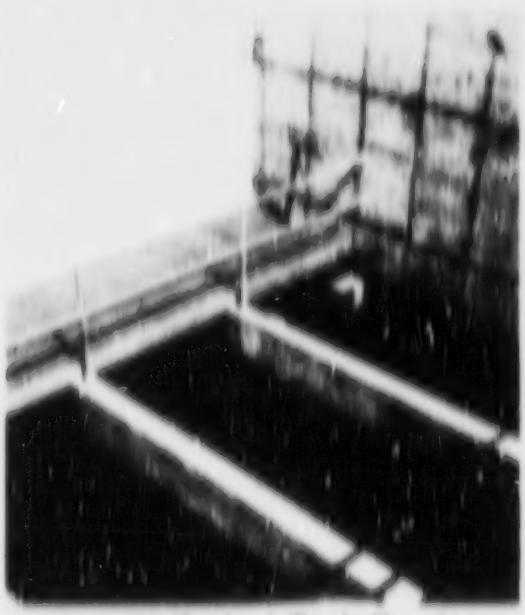



Figure 2. Peterborough, NH, wastewater treatment lagoons.

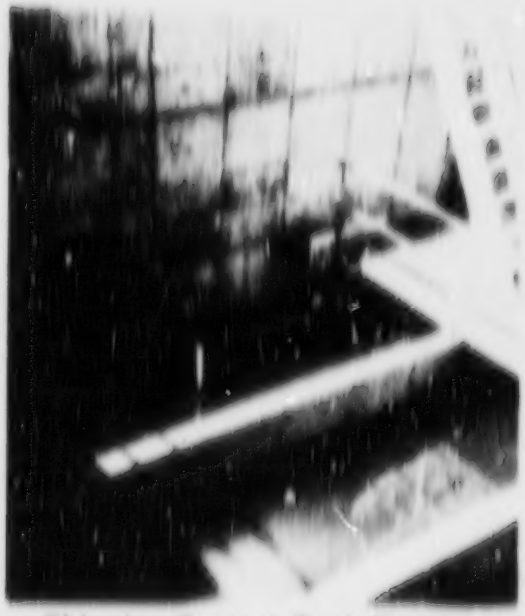


Pond No. 2 Effluent Structure

Pond No. 1 Effluent Structure



Chlorine Contact Tank Showing Effluent Weir



Chlorine Contact Tank Showing Flow Measuring Device

Figure 3. Photographs of Peterborough wastewater treatment lagoons.

Since the New Hampshire Water Supply and Water Pollution Control Commission has not required performance data for the Peterborough lagoon system, little operational data is available. Reports are filed but the only data given are water color, area covered by floating scum or algal mats, pond water depth, general weather conditions, flow rate, chlorination dosage in pounds, chlorine residual, and occasional values of pond dissolved oxygen, BOD, and ice cover.

## SECTION 5

## SAMPLING AND ANALYSIS PROCEDURES

Treatment plant wastewater flow at Peterborough is measured and continuously recorded at the pumping station by a magnetic flow meter to determine the lagoon influent flow rate. The effluent flow rate is measured in the chlorine contact chamber where water level is controlled by a V-notch weir. A float-type water level indicator in a stilling well generates the electrical signal for the recorder. In addition, to determining the hydraulic loading of the treatment plant, these flow recorders provided the information to determine the lagoon system long-term water balance.

An influent flow-proportional sample was obtained by using the existing magnetic flow meter to actuate the sampler pump at a rate proportional to flow. The sampler, Brailsford and Company Model EVS-2, delivered one sample for each closure of the flow meter switch. Sample size was adjusted to assure a 3.8 l (one gallon) total sample during each 24-hour test period. The location of the sample tube was at the head of a flume where the wastewater flow first enters the pump building. Since the pump station wetwell is small, the pumping rate is proportional to influent flow rate and thus the magnetic flow meter provided a good measure of hydraulic loading.

Other sampling locations are shown in Figure 4. These locations are the effluent from Pond No. 1, the effluent from Pond No. 2, the effluent from Pond No. 3, and the effluent from the chlorine contact chamber.

Each of these samplers was a Brailsford Model EVS-1 (battery powered), but the effluent sampler was converted to line voltage. To prevent freezing the effluent sampler was enclosed in an insulated box and heated by three light bulbs actuated by a temperature controller. The sample line was enclosed in a plastic pipe, insulated, and wrapped with a heating tape which was actuated by a separate temperature controller. The effluent sampling station is shown in Figure 5.

To minimize sample deterioration during warm periods, each sample jug was enclosed in an insulated box containing an ice-water bath. During the winter months, samples from stations 2, 3 and 4 (effluents from each pond) were obtained by grab sampling because electrical power was not available at these locations to power heaters to prevent freezing of the sample line. This is not considered to lead to significant differences compared to composited samples because changes in water characteristics were very slow due to long detention times and the thick ice cover.

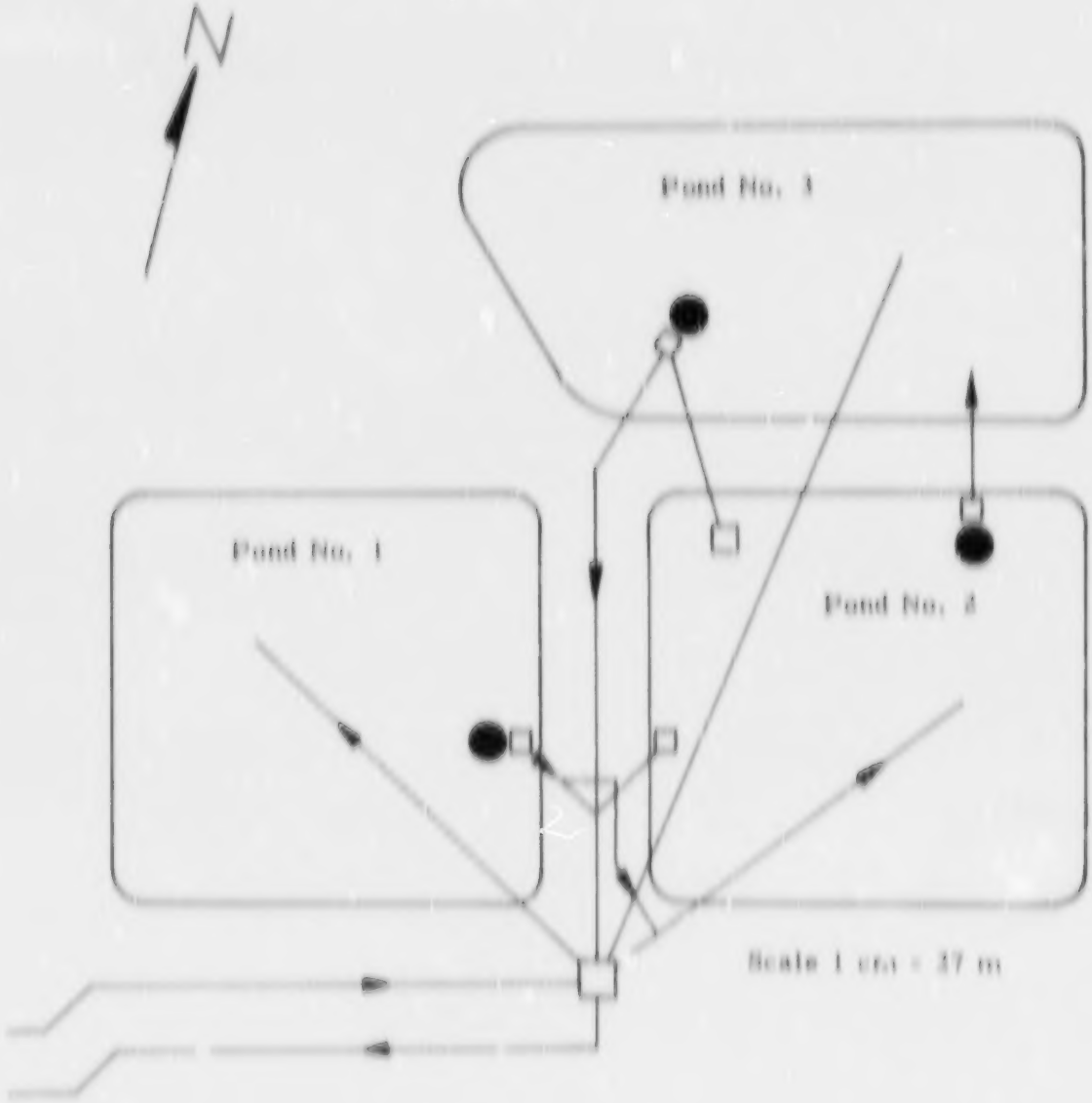



Figure 4. Location of sampling points.

Figure 5. Effluent sampling station.

The needs of the program were met by a combination of sampling programs. Evaluation of some parameters was accomplished by collection of samples over a 24-hour period with the automatic sampling devices described above. A second group of parameters cannot be preserved over the 24 hours of sample collection and the additional hours for completion of the tests. These parameters were measured on grab samples and analyzed in the field on a spot basis, or fixed and brought to the lab for analysis.

The wastewater samples required to perform the total BOD, soluble BOD, suspended solids, and algal count, in addition to the samples to be sent to EPA Advanced Waste Treatment Research Laboratory in Cincinnati, were obtained with 24-hour automatic samplers. Several of the parameters to be measured cannot be determined by composite sampling since no method is available for sample preservation. These were measured on grab samples obtained at the time of collection of the composite sample, or were measured in situ. Dissolved oxygen (DO) was measured with a polarographic probe. Similarly pH was measured with a pH probe and temperature was determined by titration of a grab sample since it is not possible to preserve a sample for this analysis. Samples for fecal coliform analysis likewise cannot be composited and stored for more than six hours. Therefore, a grab sample was filtered onto delayed incubation preservative medium and returned to the JBF laboratory for colony development.

A summary presentation of the method of sampling for each parameter is as follows:

| 24-Hour Composite | Grab Sample |
|---|---|
| Total BOD | Temperature |
| Soluble BOD | Dissolved Oxygen |
| Suspended Solids | pH |
| Algal Count | Alkalinity |
| Sample for EPA Lab | Fecal Coliform |

These sampling procedures were followed at each of the sample points within the treatment system.

The following are the laboratory analytical procedures followed during this study:

| | |
|---|---|
| pH | measured in situ, "method 144A, p. 276 Standard Methods" |
| Dissolved Oxygen | measured in situ, method 218F, p. 484 Standard Methods |

* Standard Methods for the Examination of Water and Wastewater, American Public Health Assoc., New York, N.Y. (1971).

| | |
|---|---|
| Temperature | measured in situ, method 162, p. 148 Standard Methods |
| Alkalinity | method 162, p. 52 Standard Methods |
| Total BOD | method 219, p. 489 Standard Methods. Nitrification inhibited by addition of 0.5 mg allythiourea per liter of dilution water |
| Soluble BOD | same as Total BOD but following filtration through an 0.45μ glass fiber filter. |
| Suspended Solids | method 224, p. 537 Standard Methods. |
| Fecal Coliform | method 408B, p. 684 Standard Methods. Samples preserved at treatment plant by method 408C, p. 685 Standard Methods. To aid in validating the membrane technique the fecal coliform MPN procedure, method 407C, p. 669 Standard Methods, was run on a number of samples during the early weeks of this study. |
| Algal Cell Count | method 601D, p. 734 Standard Methods. |

The following sample preservation techniques were used for samples sent to the EPA Cincinnati laboratory:

a. One liter was preserved by method 208B, p. 368 Standard Methods for Total COD, Total P, and TKN analyses.

b. One liter was preserved by addition of 1 ml per liter of chloroform to the sample for $NH_3$ - N, $NO_2$ - N, and $NO_3$ - N analyses.

c. 0.25 liter was filtered through an 0.45μ glass fiber filter and preserved by method 208B, p. 368 Standard Methods for soluble COD analysis.

Analyses performed in the field (alkalinity, filtering of fecal coliform, preservation of algal cells) were performed in the laboratory at the Peterborough wastewater treatment plant. All other analyses and preparation and packaging of samples for shipment to EPA were carried out at the JBF Scientific Corporation Laboratory which at that time was located in Burlington, Massachusetts. This laboratory is certified by the Department of Public Health of the Commonwealth of Massachusetts to perform water chemistry analyses. Transportation of samples from Peterborough to Burlington was accomplished by car, and more often by United Parcel Service delivery. Samples were contained in plastic bottles and placed in an ice bath inside sealed plastic boxes. Delivery was generally accomplished

within 24 hours. On the one occasion when delivery was delayed for three days over a holiday the sample was discarded.

SECTION 6

# EVALUATION OF THE PETERBOROUGH, NEW HAMPSHIRE, WASTEWATER TREATMENT LAGOON SYSTEM

The objectives of this project were to generate reliable year-round performance data at the Peterborough, New Hampshire, wastewater lagoon treatment plant and to utilize that data to evaluate the effectiveness of the lagoons tested to: a) perform in accordance with their design criteria, and b) to meet Secondary Treatment Standards as established by the Federal Water Pollution Control Amendments of 1972.

## Treatment Plant Loading

The treatment system was designed in early 1958 by Camp, Dresser and McKee of Boston, Massachusetts, and constructed shortly thereafter. The design rationale was an areal loading basis of 19.6 kg BOD/ha/day (17.5 lb BOD/acre/day) in 1958 to be increased as population increased to a loading of 39.2 kg BOD/ha/day (35 lb BOD/acre/day) in the year 2000. The total initial BOD load was designed to be 227 kg/day (500 lb/day). The initial flow was considered to average 1.9 mil l/day (0.5 mgd) with a maximum of 8.1 mil l/day (2.14 mgd). At the design 1.5 m (4 foot)water depth the detention time would be 57 days. In the year 2000 the detention time was estimated to be 15 days. The ponds are not aerated. The population served is 2200 persons.

A summary comparing the design loading and the actual loading is shown in Table 1. The actual flow rate is seen to average only slightly more than half the design rate. The total BOD loading is also considerably lower than the design value and the areal BOD loading is approximately 40 percent less than the design value. The data for monthly average values show that in no month did the average flow rate exceed 65 percent of the design value. The total BOD loading was likewise less than the design value for all months, and the areal loading exceeded the design value for only two months, and then by only a small amount. It is apparent that during the period of this study the Peterborough treatment system was underloaded compared to its initial design loading.

## Comparison with Secondary Treatment Standards

The Federal Secondary Treatment Standards were published in the Federal Register on August 17, 1973. The portions of those regulations to which the performance of the Peterborough wastewater treatment system is to be compared are the following:

TABLE 1. PETERBOROUGH LOADING RATES

| | Influent Flow, MGD* | | BOD, lb/day* | BOD, lb/acre/day* |
|---|---|---|---|---|
| | Ave. | Max. | | |
| Design Loading Rates (1968) | 0.50 | 2.14 | 500 | 17.5 |
| Actual Loading, 12 month average | 0.267 | 0.714 | 306 | 13.9 |
| Month | | | | |
| October | 0.241 | | 396 | 16.0 |
| November | 0.230 | | 326 | 14.8 |
| December | 0.230 | | 276 | 12.6 |
| January | 0.242 | | 248 | 11.3 |
| February | 0.256 | | 280 | 12.7 |
| March | 0.309 | | 330 | 15.0 |
| April | 0.326 | | 275 | 12.5 |
| May | 0.278 | | 387 | 17.6 |
| June | 0.262 | | 291 | 13.2 |
| July | 0.272 | | 256 | 11.7 |
| August | 0.271 | | 278 | 12.6 |
| September | 0.283 | | 323 | 14.7 |

*1 MGD = 0.044 $m^3$/sec
*1 lb BOD/day = 0.454 kg BOD/day
*1 lb BOD/acre/day = 1.12 kg BOD/ha/day

The following paragraphs describe the minimum level of effluent quality attainable by secondary treatment in terms of the parameters biochemical oxygen demand, suspended solids, fecal coliform bacteria and pH. All requirements for each parameter shall be achieved except as provided for in § 133.103.

(a) Biochemical oxygen demand (five-day).

(1) The arithmetic mean of the values for effluent samples collected in a period of 30 consecutive days shall not exceed 30 milligrams per liter.

(2) The arithmetic mean of the values for effluent samples collected in a period of seven consecutive days shall not exceed 45 milligrams per liter.

(3) The arithmetic mean of the values for effluent samples collected in a period of 30 consecutive days shall not exceed 15 percent of the arithmetic mean of the values for influent samples collected at approximately the same times during the same period (85 percent removal).

(b) Suspended solids.

(1) The arithmetic mean of the values for effluent samples collected in a period of 30 consecutive days shall not exceed 30 milligrams per liter.

(2) The arithmetic mean of the values for effluent samples collected in a period of seven consecutive days shall not exceed 45 milligrams per liter.

(3) The arithmetic mean of the values for effluent samples collected in a period of 30 consecutive days shall not exceed 15 percent of the arithmetic mean of the values for influent samples collected at approximately the same times during the same period (85 percent removal).

(c) Fecal coliform bacteria.

(1) The geometric mean of the value for effluent samples collected in a period of 30 consecutive days shall not exceed 200 per 100 milliliters.

(2) The geometric mean of the values for effluent samples collected in a period of seven consecutive days shall not exceed 400 per 100 milliliters.

(d) pH.

The effluent values for pH shall remain within the limits of 6.0 to 9.0.

The following paragraphs present the data collected during the year-long sampling and analysis program. For each of the four parameters comprising the Secondary Treatment Standards the data on treatment plant performance are summarized and compared to the Standards.

An important measure of comparison between the data gathered and the Standards is the performance of the treatment system during four intensive sampling periods which were conducted during the year-long study. The dates of intensive sampling periods were selected to provide representative portions of each season of the year. These periods were:

| | | |
|---|---|---|
| November 21 | to | December 20 |
| March 17 | to | April 25 |
| June 25 | to | July 11 |
| September 2 | to | September 30 |

A second method of comparing the data to the Standards is to use monthly data to determine compliance. When intensive daily sampling was not in progress, sampling days were selected to provide approximately equal coverage for all days of the week. This randomness of selection of sampling day, and the fact that there are no significant industrial discharges into the system, means that monthly data, although much of it was not collected on successive days, provide an accurate picture of the performance of the treatment plant throughout the year.

Performance of the Peterborough wastewater treatment system during each of the intensive sampling periods is shown in Table 2. The following paragraphs discuss each parameter considered in the Section 131 requirements.

a. Biochemical Oxygen Demand

During the first intensive sampling period (11/21 to 12/20) the treatment system met all of the requirements set forth in the Standards. The arithmetic mean value of BOD concentration in the effluent was 7.3 mg/l, thus meeting the requirement of ≤ 30 mg/l. The greatest seven day arithmetic mean was 9.0 meeting the requirement of ≤ 45 mg/l. The average influent BOD was 142.3 mg/l and the average effluent BOD was 7.3 mg/l for a removal efficiency of 95.1 percent meeting the requirement of 85 percent removal.

During the second intensive sampling period the treatment system was unable to meet the requirement of the Standards concerning BOD removal. The mean value of all effluent BOD samples was 42.9 mg/l compared to the requirement of a maximum of 30 mg/l. The worse case seven day mean effluent BOD value was 56.7 mg/l which exceeds the limit of 45 mg/l, and the average percent removal during this period was 61 percent compared to the required treatment efficiency of 85 percent. The cause of the problem apparently was the ice cover on the ponds which caused anaerobic conditions to occur. Under anaerobic conditions treatment was less effective in terms of BOD removal.

TABLE 2. INTENSIVE SAMPLING PERIODS

| | Section 133 Requirement | Period 1 11/21 to 12/29 | Period 2 3/17 to 4/25 | Period 3 6/25 to 7/11 | Period 4 9/2 to 9/30 |
|---|---|---|---|---|---|
| No. of Sampling Days | — | 29 | 39 | 16 | 29 |
| BOD | | | | | |
| Eff. conc., mg/l | | | | | |
| 30-day ave. | 30 | 7.3 | 42.9 | 10.1 | 5.6 |
| 7-day ave. | 45 | 9.6 | 56.7 | 13.6 | 6.8 |
| Percent removal | 65 | 95.1 | 81.4 | 91.2 | 95.8 |
| Suspended Solids | | | | | |
| Eff. conc., mg/l | | | | | |
| 30-day ave. | 30 | 11.1 | 11.9 | 6.5 | 8.1 |
| 7-day ave. | 45 | 14.0 | 16.7 | 10.0 | 13.6 |
| Percent removal | 65 | 92.1 | 87.7 | 95.3 | 94.9 |
| Fecal Coliform | | | | | |
| Eff. conc., no./100 ml | | | | | |
| 30-day mean | 200 | 0 | 3.0 | 0 | 1.9 |
| 7-day mean | 400 | 0 | 19.2 | 0 | 9.1 |
| pH | | | | | |
| Eff. value | 6.0 to 9.0 | 6.7 to 6.9 | 5.6 to 6.4<br>21 days below 6.0 | 6.5 to 6.7 | 6.4 to 6.7 |

By the time of the third intensive sampling period (June 25 to July 1) the ice cover had melted and the treatment system had returned to good operating conditions. The average BOD concentration for all samples during this period was 10.1 mg/l and the worst case seven day average was 13.6 mg/l, each easily meeting the requirements of the Standards. The average percent removal was 91.2 percent.

The fourth intensive sampling period showed excellent performance. The average BOD concentration for all days was 5.8 mg/l and the worst case seven day value was 6.0 mg/l. The efficiency of removal was 95.8 percent.

b. Suspended Solids

During all four intensive sampling periods the concentration of suspended solids both for entire periods and for the worst case seven day period were well within the limits imposed by the Standards. The percent removal in each case exceeded the 85 percent removal requirements.

c. Fecal Coliform

Fecal coliform concentrations in the effluent were low during each of the intensive sampling periods. During the first and third periods no coliform were observed in any of the samples. Although coliform were occasionally found in the second and fourth periods the concentrations were often zero and the geometric means were well below the values set by the Standards.

d. pH

During three of the four intensive sampling periods pH values stayed within the range of 6.0 to 9.0 percent required by the Standards. In the second period the pH was below 6.0 for many days. The lowest value observed was 5.6. The cause of the low pH was the massive amount of chlorine added to the effluent to meet the State of New Hampshire requirement of a chlorine residual of 2.0 mg/l. Under the anaerobic conditions existing in the ponds during this period, the chlorine demand of the effluent was high. The acidic effect of large amounts of chlorine often lowered the pH to levels which did not meet the Standards.

Monthly Averages of Treatment Plant Performance

The data gathered during this study may also be evaluated on the basis of monthly averages. These averages include both the data from the intensive sampling periods and also the data from other times when samples were obtained approximately twice a week. Since the sampling days were chosen essentially at random, the less frequent sampling also provides a good representation of treatment plant performance.

Table 3 shows monthly average BOD data including both total and soluble BOD. The concentration of both total and soluble BOD in the treatment plant influent were reasonably uniform throughout the year with random variation from month to month. The effluent BOD, however, shows a large increase during the months of January, February, March, and April. During all months except for this period total BOD removal was greater than 90 percent and soluble BOD removal was greater than 80 percent. During the winter months total BOD removal fell to about 60 percent with effluent BOD concentrations greater than 50 mg/l compared to the rest of the year when the total BOD concentration in the effluent was generally less than 10 mg/l. Soluble BOD removal during the four winter months decreased to the extent that effluent concentrations exceeded the influent concentration during the months of February and March. Since influent soluble BOD concentrations were lower during this period than for any other period of the year, it appears that under anaerobic conditions existing in the ponds beneath the ice cover, soluble BOD was being released from particulate matter by anaerobic decomposition. In the absence of aerobic organisms the soluble BOD was not being degraded which results in the observed increase in soluble BOD. When the ice cover left the ponds, rapid re-establishment of aerobic organisms quickly restored the treatment plant effluent to its usual condition of a low soluble BOD concentration. It is interesting to note that the concentration of effluent insoluble BOD was essentially unchanged throughout the year and ranged from 1.5 to 8.3 mg/l on a monthly average basis.

Figure 6 graphically presents the total and soluble BOD and COD data. Total oxygen demand is seen in both cases to depend on the soluble oxygen demand values since the distance between the lines (insoluble oxygen demand) was essentially constant throughout the year. COD values also exhibited the same type of seasonal variation as BOD values with a large peak during the winter months.

In addition to BOD, the Standards include restrictions on suspended solids, fecal coliform, and pH. The monthly average values of these parameters are shown in Table 4. Percent removal of suspended solids was quite consistent throughout the year with the exception of April during which the influent suspended solids concentration was by far the lowest of the year, and the effluent concentration was the second highest. No reason is known for this unusual behavior during April.

The April percent removal of suspended solids was the only month during which the 85 percent removal requirement was not met. Most months were considerably above that limit with the 12 month average percent removal of suspended solids at 91.6 percent. In contrast to the BOD removal previously discussed, suspended solids removal was apparently unaffected by the anaerobic state caused by ice cover during the winter. January, February, and March show no important differences from other months, and April's low percent removal was due more to low influent values than poor treatment.

Fecal coliform monthly values were all very low with a maximum geometric mean value of 5.4/100 ml compared to the 30-day statutory limit

TABLE 3. MONTHLY AVERAGE BIOCHEMICAL OXYGEN DEMAND

| Month | Influent, mg/l | | Effluent, mg/l | | Percent Removal | |
|---|---|---|---|---|---|---|
| | Total | Soluble | Total | Soluble | Total | Soluble |
| October | 197.3 | 70.2 | 14.3 | 12.8 | 92.8 | 81.8 |
| November | 169.9 | 49.5 | 8.8 | 7.3 | 94.8 | 85.2 |
| December | 143.5 | 48.7 | 8.5 | 6.2 | 94.1 | 87.3 |
| January | 123.2 | 39.7 | 30.9 | 25.5 | 74.9 | 35.8 |
| February | 131.1 | 36.5 | 49.0 | 43.0 | 62.6 | (17.8) |
| March | 128.0 | 43.4 | 54.9 | 46.6 | 57.1 | (7.4) |
| April | 101.4 | 31.3 | 33.8 | 28.1 | 66.7 | 10.2 |
| May | 166.8 | 72.8 | 11.8 | 7.6 | 92.9 | 89.6 |
| June | 132.5 | 55.8 | 9.8 | 6.8 | 92.6 | 87.8 |
| July | 112.7 | 48.8 | 9.9 | 6.1 | 91.2 | 87.5 |
| August | 122.6 | 56.1 | 6.4 | 4.1 | 94.8 | 92.7 |
| September | 136.8 | 49.6 | 5.8 | 3.7 | 95.8 | 92.5 |
| 12-Month Average | 138.8 | 47.3 | 20.3 | 16.4 | 87.4 | 65.3 |

TABLE 4. MONTHLY RANGE PERFORMANCE DATA

| Month | No. of Samples | Suspended Solids, mg/l Inf. | Eff. | % Rem. | Fecal Coliform/100 ml* Effluent | pH Range |
|---|---|---|---|---|---|---|
| October | 9 | 156.4 | 17.0 | 89.1 | 0 | 6.5-7.0 |
| November | 16 | 151.1 | 11.7 | 92.3 | 0 | 6.5-8.4 |
| December | 23 | 135.7 | 12.0 | 91.2 | 0 | 6.7-6.8 |
| January | 11 | 126.4 | 14.2 | 88.8 | 0 | 6.2-6.6 |
| February | 10 | 148.2 | 10.3 | 93.0 | 1.7 | 6.0-6.5 |
| March | 17 | 134.2 | 7.8 | 94.2 | 0 | 5.7-6.1 |
| April | 26 | 75.8 | 14.3 | 81.2 | 5.4 | 5.7-6.4 |
| May | 6 | 139.0 | 13.8 | 90.1 | 2.3 | 6.4-7.0 |
| June | 12 | 135.7 | 12.8 | 90.6 | 1.4 | 6.5-7.2 |
| July | 13 | 144.6 | 9.5 | 93.5 | 0 | 6.5-6.7 |
| August | 8 | 130.1 | 5.2 | 96.0 | 2.3 | 6.4-6.6 |
| September | 29 | 155.3 | 8.1 | 94.8 | 1.9 | 6.4-6.7 |
| 12-Month Average | | 133 | 11.2 | 91.6 | 1.6 | 5.7-8.4 |

*Geometric mean of all samples during period. For calculation purposes, when non-zero values occurred during a month, a value of 1 was substituted for each zero in that month.

of 200/100 ml. On most days no coliform were observed. When coliform were observed, the field log generally noted a chlorinator failure for that day.

Except for several days in March and April, pH values were within the range of 6.0 to 9.0 required by the Standards. Low pH values were caused by large doses of chlorine added to the plant effluent during the winter months to meet the 2.0 mg/l residual chlorine requirement.

## Additional Tests and Measurements

In addition to the treatment parameters previously discussed and required to be measured to determine compliance with the Standards, many other measurements and tests were conducted during this study. The Appendix contains a complete listing of all data gathered during this study. Table 5 presents a summary of treatment plant effluent quality. The following paragraphs discuss these and other results and their implications. Emphasis is placed on effluent quality.

### a. Flow Measurement

Both influent and effluent flow measurements were recorded for each sampling day during the year. A summary of the data is shown in Table 6. Influent flow averages show that the maximum flow occurred in the spring during March and April but these values were only about 20 percent greater than the average for the entire year. The magnitude of the effluent flow was a function of both the influent flow rate and the setting of the elevation of the effluent weir, and therefore short-term variations are not very meaningful. However, over the course of a year influent and effluent values should match fairly well. At Peterborough the average effluent flow rate was found to be about 27 percent lower than the influent flow rate. At this location evaporation and rainfall are approximately equal, so the loss can be presumed to be predominantly due to infiltration into the ground. At the flow rates found during this study, the total infiltration would be about 26 million gallons per year.

### b. Temperature

The treatment plant effluent temperature behaved as expected with a peak monthly average of 24 °C in July and a minimum monthly average of 2 °C in both February and March. Since the ponds have large surface area, shallow depth, and long detention time, it should be expected that the effluent temperature would vary with long seasonal air temperature.

### c. Dissolved Oxygen

The concentration of dissolved oxygen in the effluent is presented in Table 5. Monthly averages are shown together with maximum and minimum values for each month. For most months the

TABLE 1. PETERBOROUGH EFFLUENT QUALITY

TABLE 6. FLOW MEASUREMENT SUMMARY

| Month | No. of Obs. Inf. | No. of Obs. Eff. | Daily Ave., mg[a] Inf. | Daily Ave., mg[a] Eff. | Monthly Total, mg[a] Inf. | Monthly Total, mg[a] Eff. |
|---|---|---|---|---|---|---|
| October | 9 | 9 | 0.241 | 0.141 | 2.166 | 1.270 |
| November | 16 | 16 | 0.230 | 0.118 | 3.678 | 1.895 |
| December | 23 | 23 | 0.230 | 0.186 | 5.300 | 4.283 |
| January | 11 | 11 | 0.242 | 0.202 | 2.665 | 2.221 |
| February | 10 | 10 | 0.256 | 0.256 | 2.558 | 2.559 |
| March | 17 | 17 | 0.309 | 0.180 | 5.248 | 3.052 |
| April | 26 | 22 | 0.326 | 0.231 | 8.481 | 5.073 |
| May | 6 | 6 | 0.278 | 0.412 | 1.663 | 2.472 |
| June | 12 | 12 | 0.262 | 0.210 | 3.147 | 2.520 |
| July | 15 | 15 | 0.271 | 0.118 | 4.075 | 1.775 |
| August | 8 | 8 | 0.271 | 0.137 | 2.166 | 1.096 |
| September | 29 | 29 | 0.283 | 0.249 | 8.215 | 7.218 |
| weighted 12-month average | | | 0.271 | 0.199 | | |

$$\text{water loss} = \frac{0.271 - 0.199}{0.271} (100) = 26.6 \text{ percent}$$

[a] 1 mg = 1785 $m^3$

average value was quite low with only three months averaging 2.0 mg/l or greater. During the months from December to April the DO was generally below 2.0 mg/l at all times and was often essentially zero under the ice cover.

d. Chemical Oxygen Demand

Monthly values of both total and soluble COD in the effluent are shown in Table 5. A graph of these values together with comparable BOD values has been presented in Figure 6. The maximum values are seen to occur during the months of February and March when anaerobic conditions in the ponds limited biological activity.

e. Nitrogen Species

During the test period, four nitrogen species were measured: total kjeldahl nitrogen (TKN), ammonia nitrogen, nitrate and nitrite nitrogen. During the winter months when the ice cover was established TKN values rose to approximately twice the average for the other months of the year. Ammonia nitrogen values also rose to several times the value observed during other parts of the year. Although all the values were low for both nitrate and nitrite nitrogen it appears that nitrate nitrogen values decreased during the winter. The nitrite concentration was generally undetectable.

f. Total Phosphorus

Removal of total phosphorus by the treatment system averaged less than 10 percent. The plant influent averaged 6.4 mg/l and the effluent 5.9 mg/l. This result would be expected since biological treatment plants are not efficient processes for removal of phosphorus.

g. Alkalinity

Effluent alkalinity values remained essentially unchanged during the study. However, effluent values did not accurately reflect seasonal changes in alkalinity because the effluent was highly chlorinated during the winter months. The chemical reactions occurring during chlorination release hydrochloric acid and in effect reduce the alkalinity of the water. A better measure of seasonal changes is the effluent from Pond No. 4 prior to chlorination. This exhibits a marked trend as shown in the following table:

| | | | |
|---|---|---|---|
| October | 81 mg/l | April | 114 mg/l |
| November | 93 mg/l | May | 107 mg/l |
| December | 108 mg/l | June | 94 mg/l |
| January | 135 mg/l | July | 92 mg/l |
| February | 164 mg/l | August | 80 mg/l |
| March | 147 mg/l | September | 82 mg/l |

During the summer months when algal biological activity was

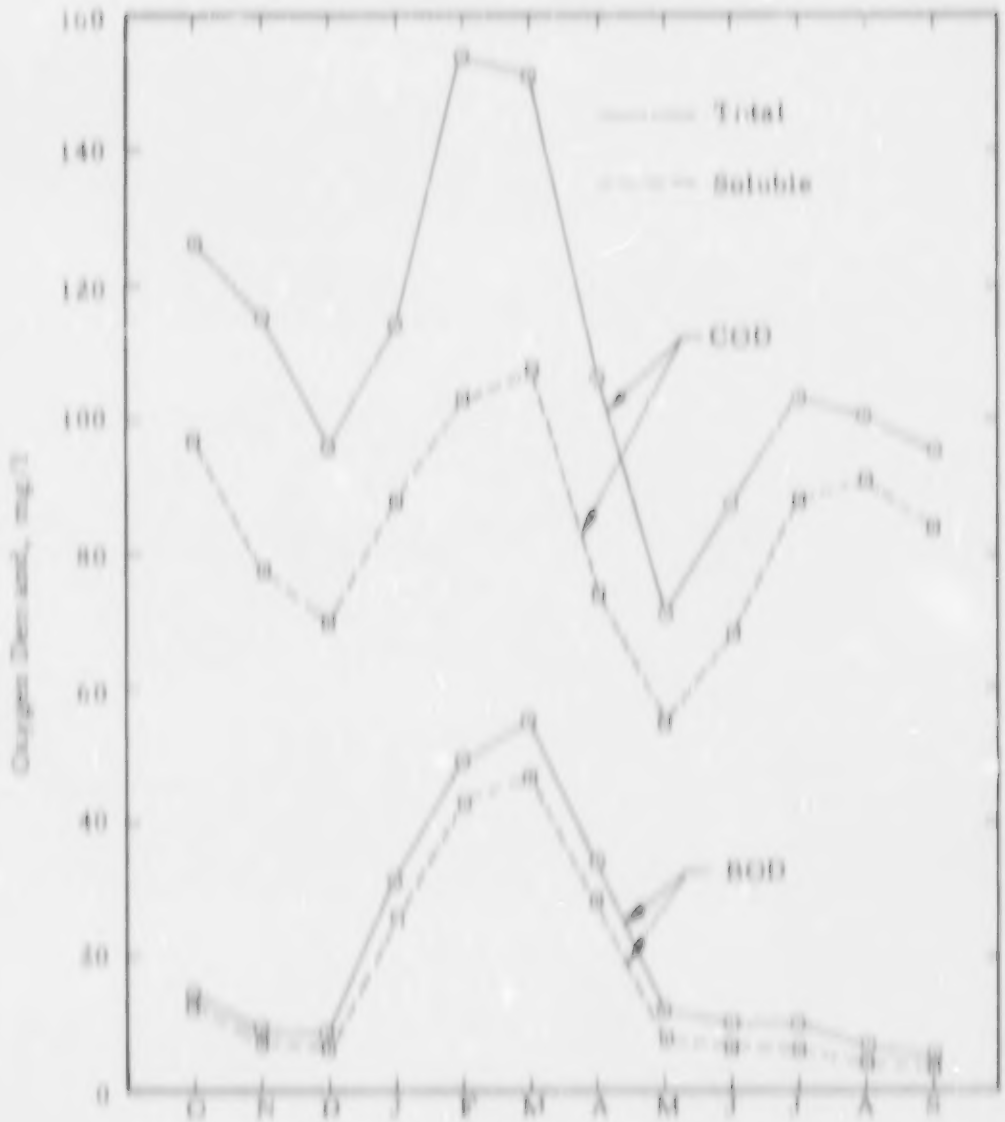



Figure 6. Average monthly effluent oxygen demand.

greatest, the concentration of inorganic carbon (bicarbonate) was low. As biological activity slowed down during the winter, the concentration of bicarbonates increased. During the winter the anaerobic organisms under the ice cover produced carbon dioxide as a decomposition product and thus increased alkalinity.

h. Algae

One of the tests performed during this study was algae counting by microscopic examination of samples preserved in formaldehyde. This effort was largely unproductive. Several reasons can be cited including large concentrations of detrital matter (particularly during the winter months) which interfered with counting, large variations in species which caused difficulty in identification of which particulate matter were actually algae, and the sporadic presence of rotifers in the samples which consumed the algae before being killed by the preservative. For these reasons the algae count data contained in this report is of questionable value and great care should be taken in utilizing this data.

i. Chlorine Residual

The Peterborough treatment plant uses chlorine for disinfection of the effluent immediately before discharge to the Otonabee River. The criteria used to determine the proper dose is that a chlorine residual of 2.0 mg/l is to be maintained. When the ponds are aerobic the chlorine dose required to maintain the residual is about 10 mg/l. As the ice cover formed and the ponds became anaerobic and the chlorine demand (chlorine dose minus chlorine residual) rapidly increased to more than 40 mg/l. When the ice went out in April the chlorine demand rapidly returned to its summer time condition. The following Table shows the chlorine demand during the year of study:

| | | | |
|---|---|---|---|
| October | 9.9 mg/l | April | 30.8 mg/l |
| November | 9.5 mg/l | May | 5.9 mg/l |
| December | 8.0 mg/l | June | 9.0 mg/l |
| January | 43.3 mg/l | July | 8.7 mg/l |
| February | 41.7 mg/l | August | 9.9 mg/l |
| March | 42.0 mg/l | September | 7.3 mg/l |

This dramatically shows the change of behavior of the pond system through the seasons.

## SECTION 7

## APPENDICES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| APPENDIX A - DATA SHEETS | A2 |
| APPENDIX B - REMARKS AND OBSERVATIONS | B3 |

| DATE | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AIR TEMP °C max-min | | | | | | | | | | | | | | | |
| WEATHER | | | | | | | | | | | | | | | |
| INF FLOW, MG | | | | | | | | | | | | | | | |
| EFF FLOW, MG | | | | | | | | | | | | | | | |
| $Cl_2$ DOSE MG/L | | | | | | | | | | | | | | | |
| $Cl_2$ RESIDUAL MG/L | | | | | | | | | | | | | | | |
| | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF |
| TEMP °C | | | | | | | | | | | | | | | |
| DO, MG/L | | | | | | | | | | | | | | | |
| pH | | | | | | | | | | | | | | | |
| ALKALINITY MG/L | | | | | | | | | | | | | | | |
| SUSP SOLIDS MG/L | | | | | | | | | | | | | | | |
| BOD TOTAL MG/L | | | | | | | | | | | | | | | |
| BOD, SOL MG/L | | | | | | | | | | | | | | | |
| ALGAE /ML x $10^3$ | | | | | | | | | | | | | | | |
| *FECAL COLI/100 ML x $10^3$ | | | | | | | | | | | | | | | |
| *MPN/100 ML x $10^3$ | | | | | | | | | | | | | | | |
| $NH_3$-N, MG/L | | | | | | | | | | | | | | | |
| $NO_3$-N, MG/L | | | | | | | | | | | | | | | |
| $NO_2$ N, MG/L | | | | | | | | | | | | | | | |
| COD TOTAL MG/L | | | | | | | | | | | | | | | |
| COD SOL. MG/L | | | | | | | | | | | | | | | |
| TKN MG/L | | | | | | | | | | | | | | | |
| TOTAL P MG/L | | | | | | | | | | | | | | | |

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML.

| DATE | 10/13/74 | | | | | 10/14/74 | | | | | 10/15/74 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AIR TEMP °C MAX/MIN | | | | | | | | | | | | | | | |
| WEATHER | Cloudy | | | | | Rain | | | | | Sunny | | | | |
| INF FLOW, MG | 0.471 | | | | | 0.310 | | | | | 0.352 | | | | |
| EFF FLOW MG | 0.158 | | | | | 0.159 | | | | | 0.151 | | | | |
| $Cl_2$ DOSE MG/L | 13.0 | | | | | 13.1 | | | | | 12.3 | | | | |
| $Cl_2$ RESIDUAL MG/L | 3.6 | | | | | 1.8 | | | | | 2.0 | | | | |
| | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF |
| TEMP °C | 18 | 11 | 11 | 11 | 11 | 15 | 11 | 11 | 10.5 | 12 | 13 | 9 | 9 | 9 | 9.5 |
| DO, MG/L | 3.5 | 7.0 | 10.3 | 11.4 | 5.9 | 4.1 | 10.1 | 10.5 | 7.5 | 6.9 | 5.0 | 4.0 | 7.9 | 11.9 | 5.1 |
| pH | 7.1 | 7.6 | 8.8 | 9.9 | 6.7 | 7.1 | 7.1 | 8.1 | 7.6 | 6.6 | 7.0 | 7.1 | 7.9 | 7.5 | 6.6 |
| ALKALINITY MG/L | 166 | 113 | 109 | 97 | 78 | 178 | 130 | 100 | 86 | 64 | 134 | 113 | 96 | 93 | 91 |
| SUSP SOLIDS MG/L | 68 | 31 | 58 | 38 | 16 | 163 | 60 | 83 | 30 | 18 | 151 | 83 | 49 | 18 | 18 |
| BOD TOTAL MG/L | 207 | 45 | 38 | 39 | 13 | 194 | 81 | 51 | 36 | 13 | 213 | 59 | 33 | 11 | 13 |
| BOD, SOL MG/L | 67 | 9 | 6 | 9 | 10 | 78 | 11 | 10 | 12 | 14 | 91 | 7 | 8 | 8 | 10 |
| ALGAE /ML x $10^3$ | — | 193 | 176 | 91 | 58 | — | 117 | 167 | 95 | 33 | — | 60 | 126 | 78 | 61 |
| *FECAL COLI/100ML x $10^6$ | | | | | | 80 | 0.37 | 0.24 | 0.11 | 0 | 0.8 | 0.44 | 0.32 | 0.14 | 0 |
| *MPN/100 ML x $10^6$ | | | | | | 1.6 | 0.93 | 0.56 | | | | | | | |
| $NH_3$-N, MG/L | 15.1 | 10.3 | 7.1 | 4.7 | 4.1 | 18.3 | 10.7 | 6.9 | 4.5 | 4.1 | 19.6 | 11.2 | 7.8 | 4.4 | 4.3 |
| $NO_3$-N, MG/L | 0.1 | 0.1 | 0.1 | 0.1 | 0.5 | 0.1 | 0.1 | 0.1 | 0.1 | 0.5 | 0.1 | 0.1 | 0.1 | 0.1 | 0.5 |
| $NO_2$-N, MG/L | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| COD TOTAL MG/L | 369 | 210 | 196 | 148 | 118 | 356 | 213 | 136 | 140 | 116 | 361 | 165 | 123 | 121 | 117 |
| COD SOL. MG/L | 189 | 137 | 129 | 104 | 93 | 198 | 137 | 119 | 114 | 97 | 129 | 105 | 130 | 115 | 101 |
| TKN MG/L | 32.1 | 21.5 | 19.6 | 12.8 | 10.8 | 34.9 | 25.6 | 17.0 | 11.6 | 10.9 | 41.0 | 23.0 | 13.6 | 11.1 | 11.4 |
| TOTAL P MG/L | 7.1 | 7.9 | 7.6 | 6.9 | 6.8 | 9.1 | 9.1 | 7 | 6.8 | 6.6 | 9.5 | 7.7 | 7.5 | 6.6 | 6.9 |

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML.

| DATE | 10/13/14 | | | | | 10/14/14 | | | | | 10/15/14 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AIR TEMP °C MAX/MIN | | | | | | | | | | | | | | | |
| WEATHER | Sunny | | | | | Sunny | | | | | Clear | | | | |
| INF FLOW, MG | 0.137 | | | | | 0.135 | | | | | 0.176 | | | | |
| EFF FLOW, MG | 0.149 | | | | | 0.149 | | | | | 0.150 | | | | |
| $Cl_2$ DOSE MG/L | 11.9 | | | | | 8.9 | | | | | 11.4 | | | | |
| $Cl_2$ RESIDUAL MG/L | 5.0 | | | | | 5.0 | | | | | 7.5 | | | | |
| | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF |
| TEMP °C | 12 | 8 | 8 | 8 | 7 | 15 | 6.5 | 6.5 | 6.5 | 6 | 14 | 9 | 9 | 9 | 9 |
| DO, MG/L | 3.0 | 3.7 | 11.8 | 11.6 | 6.9 | 8.8 | 8.6 | 13.1 | 12.3 | 8.1 | 7.3 | 6.8 | 14.0 | 14.6 | 7.8 |
| pH | 7.4 | 7.6 | 9.3 | 9.4 | 6.7 | 7.3 | 7.4 | 9.4 | 9.4 | 7.0 | 7.3 | 7.5 | 9.4 | 9.6 | 7.0 |
| ALKALINITY MG/L | 183 | 183 | 96 | 90 | 66 | 167 | 163 | 100 | 98 | 71 | 90 | 120 | 100 | 83 | 75 |
| SUSP SOLIDS MG/L | 161 | 87 | 53 | 36 | 19 | 160 | 87 | 68 | 29 | 20 | 107 | 73 | 50 | 37 | 19 |
| BOD TOTAL MG/L | 130 | 61 | 54 | 36 | 19 | 195 | 89 | 29 | 34 | 21 | 146 | 87 | 40 | 45 | 20 |
| BOD, SOL MG/L | 76 | 12 | 9 | 13 | 19 | 68 | 11 | 6 | 10 | 19 | 80 | 13 | 10 | 16 | 16 |
| ALGAE /ML $\times 10^3$ | — | 33 | 44 | 59 | 55 | — | 30 | 52 | 57 | 32 | — | 89 | 13 | 48 | 31 |
| *FECAL COLI/100ML $\times 10^6$ | 6.9 | 2.30 | 0.049 | 0.079 | 0 | 0.4 | 0.116 | 0.0005 | 0.0005 | 0 | 0.4 | 0.01 | 0.001 | 0.001 | 0 |
| *MPN/100 ML $\times 10^6$ | | | | | | | | | | | | | | | |
| $NH_3$-N, MG/L | 18.1 | 11.6 | 7.1 | 4.1 | 3.7 | 18.6 | 12.3 | 7.1 | 5.7 | 3.7 | 17.1 | 10.1 | 7.2 | 4.1 | 3.7 |
| $NO_3$-N, MG/L | 0.01 | 0.01 | 0.01 | 0.1 | 0.1 | 0.01 | 0.01 | 0.01 | 0.01 | 0.3 | 0.01 | 0.01 | 0.01 | 0.1 | 1.4 |
| $NO_2$ N, MG/L | 0.01 | 0.01 | 0.1 | 0.5 | 0.01 | 0.01 | 0.01 | 0.1 | 0.5 | 0.1 | 0.01 | 0.01 | 0.1 | 0.5 | 0.5 |
| COD TOTAL MG/L | 378 | 301 | 160 | 135 | 119 | 318 | 197 | 171 | 146 | 136 | 318 | 236 | 149 | 105 | 129 |
| COD SOL. MG/L | 189 | 181 | 139 | 110 | 119 | 140 | 134 | 131 | 124 | 113 | 99 | 145 | 131 | 116 | 110 |
| TKN MG/L | 20.4 | 19.6 | 17 | 11 | 5.7 | 20.9 | 18.6 | 17.6 | 11.6 | 20.5 | 24.8 | 29.5 | 19.5 | 13.5 | 11.5 |
| TOTAL P MG/L | 11.5 | 7.9 | 7.5 | 6.8 | 6.7 | 8.1 | 7.8 | 7.8 | 6.6 | 6.7 | 8.0 | 8.8 | 7.5 | 7.1 | 6.5 |

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML.

| DATE | 11/3/74 | | | | | 11/4/74 | | | | | 11/5/74 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AIR TEMP °C MAX/MIN | | | | | | | | | | | | | | | |
| WEATHER | Sunny | | | | | Rain | | | | | Cloudy | | | | |
| INF FLOW, MG | 0.161 | | | | | 0.177 | | | | | 0.285 | | | | |
| EFF FLOW, MG | 0.171 | | | | | 0.150 | | | | | 0.101 | | | | |
| $Cl_2$ DOSE MG/L | 13.1 | | | | | 13.5 | | | | | 13.9 | | | | |
| $Cl_2$ RESIDUAL MG/L | 5.0 | | | | | 3.0 | | | | | 1.0 | | | | |
| | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF |
| TEMP °C | 14 | 11 | 11 | 10 | 11 | 15 | 13 | 11 | 11 | 12 | 10.5 | 11 | 10.5 | 10.5 | 11.5 |
| DO, MG/L | 4.0 | 0.5 | 10.3 | 9.0 | 4.6 | 1.9 | 0.4 | 10.4 | 7.4 | 3.8 | 3.7 | 0.7 | 3.5 | 3.6 | 1.7 |
| PH | 7.6 | 7.5 | 7.6 | 8.5 | 7.8 | 7.1 | 7.1 | 7.1 | 7.5 | 6.7 | 7.5 | 7.1 | 7.5 | 7.1 | 6.9 |
| ALKALINITY MG/L | 170 | 132 | 96 | 92 | 90 | 82 | 130 | 105 | 85 | 66 | 115 | 135 | 96 | 98 | 80 |
| SUSP SOLIDS MG/L | 162 | 90 | 129 | 31 | 16 | 193 | 65 | 61 | 28 | 15 | 166 | 53 | 41 | 15 | 16 |
| BOD TOTAL MG/L | 139 | 63 | 50 | 55 | 16 | 157 | 49 | 51 | 50 | 14 | 149 | 44 | 16 | 16 | 15 |
| BOD, SOL MG/L | 15 | 11 | 7 | 8 | 12 | 19 | 16 | 10 | 10 | 13 | 45 | 11 | 9 | 9 | 12 |
| ALGAE /ML $\times 10^3$ | — | 29 | 91 | 27 | 13 | — | 116 | 97 | 51 | 15 | — | 219 | 147 | 15 | 19 |
| *FECAL COLI/100ML $\times 10^6$ | 5.4 | 0.91 | 0.46 | 0.18 | 0 | 2.0 | 0.19 | 0.1 | 0.4 | 0 | 4.6 | 0.19 | 0.09 | 0.04 | 0 |
| *MPN/100ML $\times 10^6$ | | | | | | | | | | | 0.92 | 0.03 | 0.02 | 0.01 | 0 |
| $NH_3$-N, MG/L | 21.4 | 12.4 | 6.6 | 3.0 | 3.6 | 21.4 | 13.4 | 6.5 | 3.3 | 3.5 | 19.6 | 10.4 | 8.8 | 4.4 | 4.6 |
| $NO_3$-N, MG/L | <0.1 | <0.1 | 0.2 | 0.5 | <0.1 | <0.1 | <0.1 | 0.1 | 0.4 | 0.4 | 0.1 | 0.1 | 0.1 | 0.1 | 0.5 |
| $NO_2$ N, MG/L | <0.1 | <0.1 | <0.1 | 0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| COD TOTAL MG/L | 399 | 247 | 189 | 182 | 136 | 518 | 215 | 215 | 146 | 125 | 529 | 191 | 160 | 105 | 111 |
| COD SOL. MG/L | 191 | 135 | 134 | 119 | 105 | 91 | 93 | 81 | 76 | 83 | 87 | 95 | 79 | 71 | 74 |
| TKN MG/L | 24.0 | 17.6 | 13.1 | 5.6 | 10.4 | 28.8 | 26.9 | 20.0 | 10.6 | 12.9 | 28.0 | 27.6 | 17.1 | 9.9 | 10.0 |
| TOTAL P MG/L | 9.5 | 1.9 | 8.0 | 6.1 | 6.1 | 9.1 | 8.0 | 7.5 | 6.2 | 6.2 | 6.9 | 7.9 | 7.2 | 6.8 | 6.1 |

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML.

| DATE | 11/13/78 | | | | | 11/14/78 | | | | | 11/19/78 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AIR TEMP °C MAX/MIN | | | | | | | | | | | 12 / -6 | | | | |
| WEATHER | Rain | | | | | Cloudy | | | | | Clear | | | | |
| INF FLOW, MG | 0.216 | | | | | 0.149 | | | | | 0.131 | | | | |
| EFF FLOW, MG | 0.150 | | | | | 0.101 | | | | | 0.111 | | | | |
| $Cl_2$ DOSE MG/L | 15.5 | | | | | 19.0 | | | | | 13.0 | | | | |
| $Cl_2$ RESIDUAL MG/L | 1.5 | | | | | 4.0 | | | | | 3.0 | | | | |
| | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF |
| TEMP °C | 13 | 9 | 8 | 6 | 9 | 14 | 8 | 7.5 | 7 | 9 | 14 | 8 | 8 | 8 | 7 |
| DO, MG/L | 2.3 | 4.1 | 6.4 | 6.8 | 6.7 | 1.4 | 7.1 | 6.5 | 7.1 | 6.6 | 2.7 | 10.6 | 5.1 | 2.9 | 1.4 |
| pH | 7.1 | 7.1 | 7.1 | 6.9 | 6.8 | 7.1 | 7.1 | 7.1 | 7.0 | 6.6 | 7.3 | 7.4 | 7.3 | 7.1 | 6.7 |
| ALKALINITY MG/L | 89 | 115 | 109 | 75 | 69 | 126 | 119 | 111 | 90 | 72 | 106 | 125 | 116 | 108 | 86 |
| SUSP SOLIDS MG/L | 135 | 66 | 89 | 17 | 9 | 171 | 74 | 60 | 17 | 10 | 185 | 109 | 69 | 33 | 15 |
| BOD TOTAL MG/L | 139 | 80 | 66 | 16 | 7 | 174 | 81 | 51 | 16 | 10 | 136 | 81 | 59 | 16 | 11 |
| BOD, SOL MG/L | 40 | 9 | 8 | 5 | 6 | 44 | 9 | 8 | 5 | 5 | 89 | 11 | 9 | 7 | 10 |
| ALGAE /ML $\times 10^3$ | — | 396 | 213 | 24 | 17 | — | 396 | 189 | 28 | 19 | — | 183 | 33 | 1.8 | 2.2 |
| *FECAL COLI/100 ML $\times 10^6$ | 2.5 | 0.1 | 0.2 | 0.01 | 0 | 1.2 | 0.18 | 0.14 | 0.12 | 0 | 6.4 | 0.17 | 0.19 | 0.19 | 0 |
| *MPN /100 ML $\times 10^6$ | | | | | | 2.4 | 0.34 | 3.4 | 0.04 | 0 | 3.4 | 0.15 | 0.33 | 0.55 | 0 |
| $NH_3$-N, MG/L | 21.5 | 15.2 | 10.4 | 5.7 | 4.3 | 23.6 | 14.0 | 10.1 | 5.9 | 4.7 | 20.3 | 18.9 | 11.6 | 4.7 | 6.3 |
| $NO_3$-N, MG/L | 0.04 | 0.02 | 0.05 | 0.15 | 0.17 | 0.01 | 0.01 | 0.03 | 0.14 | 0.17 | 0.09 | 0.01 | 0.09 | 0.04 | 0.15 |
| $NO_2$ N, MG/L | 0.11 | 0.05 | 0.04 | 0.06 | 0.05 | 0.08 | 0.04 | 0.07 | 0.07 | 0.05 | 0.03 | 0.09 | 0.06 | 0.05 | 0.07 |
| COD TOTAL MG/L | 196 | 216 | 133 | 104 | 104 | 339 | 201 | 169 | 101 | 114 | 341 | 334 | 178 | 110 | 107 |
| COD SOL. MG/L | [illegible] | 78 | 70 | 70 | 74 | 109 | 86 | 74 | 77 | 75 | 139 | 80 | 66 | 76 | 76 |
| TKN MG/L | 109 | 61.0 | 111 | 11.9 | 10.1 | 60.9 | 17.1 | 21.6 | 11.6 | 19.6 | 101 | 36.0 | 14.9 | 12.5 | 13.0 |
| TOTAL P MG/L | 7.5 | 9.0 | 7.1 | 6.5 | 6.4 | 6.9 | 7.8 | 7.1 | 6.6 | 6.7 | 8.6 | 7.7 | 7.1 | 6.6 | 6.4 |

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML.

| DATE | 11/21/74 | | | | | 11/22/74 | | | | | 11/23/74 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AIR TEMP °C MAX/MIN | 11/2 | | | | | 4/-5 | | | | | 1/-11 | | | | |
| WEATHER | Rain | | | | | Clear, Cold | | | | | Clear | | | | |
| INF FLOW, MG | 0.188 | | | | | 0.193 | | | | | 0.183 | | | | |
| EFF FLOW, MG | 0.111 | | | | | 0.106 | | | | | 0.111 | | | | |
| $Cl_2$ DOSE MG/L | 9.2 | | | | | 10.2 | | | | | 10.9 | | | | |
| $Cl_2$ RESIDUAL MG/L | 2.0 | | | | | 2.0 | | | | | 2.0 | | | | |
| | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF |
| TEMP °C | 13 | 6 | 6 | 6 | 7 | 13 | 4 | 4 | 4 | 6 | 12 | 4 | 3 | 4 | 5 |
| DO, MG/L | 3.1 | 7.9 | 6.9 | 7.9 | 7.6 | 7.8 | 6.6 | 6.6 | 5.1 | 8.5 | 7.8 | 6.8 | 6.1 | 6.8 | 7.5 |
| pH | 7.1 | 7.3 | 7.2 | 7.0 | 6.7 | 7.0 | 7.1 | 7.1 | 7.0 | 6.7 | 7.1 | 7.3 | 7.3 | 7.0 | 6.7 |
| ALKALINITY MG/L | 68 | 120 | 117 | 98 | 91 | 107 | 121 | 116 | 98 | 92 | 101 | 113 | 116 | 98 | 86 |
| SUSP SOLIDS MG/L | 220 | 87 | 48 | 18 | 9 | 139 | 86 | 46 | 17 | 10 | 121 | 86 | 60 | 13 | 10 |
| BOD TOTAL MG/L | 213 | 66 | 30 | 9 | 8 | 128 | 62 | 32 | 9 | 8 | 164 | 80 | 40 | 16 | 6 |
| BOD, SOL MG/L | 35 | 7 | 6 | 1 | 4 | 42 | 12 | 6 | 4 | 8 | 83 | 10 | 7 | 4 | 6 |
| ALGAE /ML x $10^3$ | — | 1100 | 1300 | 510 | 290 | — | 4200 | 2300 | 8.6 | 2.9 | — | 1400 | 1800 | 220 | 930 |
| *FECAL COLI/100 ML x $10^6$ | 5.4 | 0.4 | 0.55 | 0.6 | 0 | 2.3 | 0.19 | 0.16 | 0.17 | 0 | 1.9 | 0.18 | 0.13 | 0.15 | 0 |
| *MPN/100 ML x $10^6$ | | | | | | | | | | | | | | | |
| $NH_3$-N, MG/L | 19.6 | 14.4 | 11.4 | 7.0 | 6.4 | 20.0 | 14.0 | 11.5 | 6.9 | 6.6 | 16.9 | 15.0 | 11.0 | 8.5 | 6.6 |
| $NO_3$-N, MG/L | 0.04 | 0.07 | 0.13 | 0.10 | 0.14 | 0.05 | 0.04 | 0.07 | 0.05 | 0.17 | 0.04 | 0.05 | 0.11 | 0.09 | 0.17 |
| $NO_2$ N, MG/L | 0.05 | 0.05 | 0.04 | 0.04 | 0.06 | 0.04 | 0.08 | 0.07 | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 |
| COD TOTAL MG/L | 284 | 135 | 167 | 113 | 104 | 293 | 133 | 150 | 97 | 101 | 316 | 130 | 135 | 131 | 111 |
| COD SOL. MG/L | 87 | 76 | 68 | 71 | 75 | 118 | 88 | 68 | 75 | 78 | 113 | 77 | 71 | 80 | 80 |
| TKN MG/L | 30.4 | 16.8 | 19.0 | 12.7 | 10.8 | 30.0 | 20.4 | 21.6 | 11.8 | 8.8 | 26.4 | 26.8 | 12.8 | 12.0 | 11.8 |
| TOTAL P MG/L | 8.9 | 7.6 | 6.9 | 6.6 | 6.8 | 8.6 | 7.6 | 6.8 | 6.4 | 6.4 | 7.4 | 7.6 | 7.4 | 6.4 | 6.8 |

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML.

| DATE | 11/14/78 | | | | | 11/15/78 | | | | | 11/16/78 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AIR TEMP °C MAX/MIN | 6/-5 | | | | | 5/0 | | | | | 9/-1 | | | | |
| WEATHER | cloudy | | | | | cloudy | | | | | cloudy, snow | | | | |
| INF FLOW, MG | 0.109 | | | | | 0.199 | | | | | 0.150 | | | | |
| EFF FLOW, MG | 0.114 | | | | | 0.109 | | | | | 0.111 | | | | |
| CL$_2$ DOSE MG/L | 10.5 | | | | | 10.0 | | | | | 12.0 | | | | |
| CL$_2$ RESIDUAL MG/L | 2.0 | | | | | 1.0 | | | | | 2.0 | | | | |
| | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF |
| TEMP °C | 11 | 5 | 4 | 4 | 5.5 | 10 | 6 | 5 | 6 | 6 | 13 | 4 | 3 | 3 | 6 |
| DO, MG/L | 3.5 | 4.0 | 4.9 | 2.0 | 1.1 | 2.1 | 4.0 | 4.7 | 3.5 | 1.9 | 2.9 | 2.9 | 6.1 | 2.1 | 1.5 |
| pH | 7.0 | 7.2 | 7.4 | 7.0 | 6.7 | 7.0 | 7.2 | 7.4 | 7.2 | 6.9 | 7.2 | 7.2 | 7.2 | 7.0 | 6.7 |
| ALKALINITY MG/L | 94 | 129 | 110 | 96 | 93 | 99 | 116 | 110 | 99 | 86 | 109 | 136 | 116 | 95 | 85 |
| SUSP SOLIDS MG/L | 112 | 64 | 53 | 15 | 11 | 341 | 79 | 51 | 16 | 9 | 195 | 76 | 49 | 17 | 11 |
| BOD TOTAL MG/L | 193 | 43 | 55 | 15 | 6 | 145 | 49 | 57 | 19 | 9 | | | | | |
| BOD, SOL MG/L | 89 | 9 | 6 | 2 | 0 | 39 | 12 | 14 | 9 | 9 | | | | | |
| ALGAE /ML x 10$^3$ | — | 1300 | 1900 | 469 | 467 | — | 2001 | 1911 | 856 | 587 | — | 999 | 855 | 691 | 193 |
| *FECAL COLI/100ML x10$^6$ | 2.1 | 0.09 | 0.13 | 0.16 | 0 | 3.0 | 0.47 | 0.15 | 0.14 | 0 | 0.7 | 0.15 | 0.11 | 0.01 | 0 |
| *MPN/100ML x10$^6$ | | | | | | | | | | | | | | | |
| NH$_3$-N, MG/L | 13.9 | 10.9 | 11.6 | 7.3 | 6.9 | 15.7 | 12.5 | 11.5 | 7.6 | 6.5 | 11.0 | 15.0 | 12.3 | 7.0 | 7.1 |
| NO$_3$-N, MG/L | 0.01 | 0.05 | 0.10 | 0.05 | 0.17 | 0.01 | 0.10 | 0.15 | 0.15 | 0.17 | 0.04 | 0.04 | 0.09 | 0.26 | 0.16 |
| NO$_2$-N, MG/L | 0.04 | 0.05 | 0.06 | 0.04 | 0.06 | 0.03 | 0.05 | 0.04 | 0.03 | 0.03 | 0.01 | 0.01 | 0.01 | 0.03 | 0.03 |
| COD TOTAL MG/L | 197 | 108 | 127 | 111 | 110 | 419 | 234 | 176 | 119 | 110 | 409 | 181 | 164 | 115 | 98 |
| COD SOL. MG/L | 111 | 77 | 68 | 71 | 73 | 118 | 97 | 87 | 78 | 76 | 199 | 91 | 83 | 86 | 93 |
| TKN MG/L | 31.5 | 19.0 | 20.4 | 11.8 | 11.5 | 36.5 | 26.5 | 21.0 | 11.8 | 11.0 | 27.6 | 26.4 | 21.3 | 13.6 | 11.9 |
| TOTAL P MG/L | 8.6 | 7.5 | 7.1 | 6.5 | 6.4 | 9.1 | 7.8 | 7.1 | 6.6 | 6.4 | 9.1 | 7.2 | 7.0 | 6.6 | 6.3 |

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML.

| DATE | 11/17/78 | | | | | 11/18/78 | | | | | 11/19/78 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AIR TEMP °C MAX/MIN | -1/-9 | | | | | 5/-12 | | | | | 7.5/-6 | | | | |
| WEATHER | Clear | | | | | Partly Cloudy | | | | | Cloudy | | | | |
| INF FLOW, MG | 0.189 | | | | | 0.187 | | | | | 0.196 | | | | |
| EFF FLOW, MG | 0.112 | | | | | 0.112 | | | | | 0.116 | | | | |
| $Cl_2$ DOSE MG/L | 9.6 | | | | | 10.9 | | | | | | | | | |
| $Cl_2$ RESIDUAL MG/L | 2.0 | | | | | 2.0 | | | | | | | | | |
| | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF |
| TEMP °C | 3 | 15 | 1 | 2 | 4 | 12 | 3 | 15 | 2.5 | 4 | 11.5 | 4 | 3 | 3 | 5 |
| DO, MG/L | 2.8 | 4.6 | 7.6 | 8.2 | 7.5 | 8.2 | 10 | 8.8 | 8.0 | 8.7 | 5.6 | 6.8 | 8.4 | 8.0 | 7.5 |
| pH | 7.2 | 7.2 | 7.5 | 7.1 | 6.8 | 7.9 | 7.5 | 7.8 | 7.1 | 6.8 | 7.1 | 7.1 | 7.8 | 7.0 | 6.7 |
| ALKALINITY MG/L | 112 | 126 | 121 | 96 | 86 | 104 | 127 | 121 | 104 | 89 | 112 | 132 | 117 | 100 | 109 |
| SUSP SOLIDS MG/L | 65 | 70 | 61 | 28 | 11 | 38 | 61 | 44 | 14 | 13 | 16.5 | 31 | 15.0 | 11 | 14 |
| BOD TOTAL MG/L | 89 | 86 | 55 | 15 | 6 | 73 | 82 | 34 | 18 | 8 | 197 | 61 | 50 | 19 | 9 |
| BOD, SOL MG/L | 52 | 7 | 5 | 1 | 4 | 36 | 10 | 9 | 5 | 6 | 89 | 11 | 7 | 4 | 6 |
| ALGAE /ML $\times 10^3$ | — | 1600 | 1100 | 550 | 305 | — | 3100 | 1800 | 1355 | 591 | — | 1300 | 1900 | 535 | 6108 |
| FECAL COLI/100 ML $\times 10^6$ | 4.6 | 0.81 | 0.25 | 0.08 | 0 | 7.5 | 0.47 | 0.17 | 0.01 | 0 | 1.1 | 0.50 | 0.16 | 0.03 | 0 |
| MPN /100 ML $\times 10^6$ | | | | | | | | | | | 1.6 | 0.18 | 0.14 | 0.03 | 0 |
| $NH_3$-N, MG/L | 16.2 | 15.0 | 11.5 | 7.5 | 4.2 | 21.0 | 16.5 | 12.1 | 7.7 | 3.8 | 21.7 | 15.5 | 11.9 | 7.5 | 3.6 |
| $NO_3$-N, MG/L | 0.10 | 0.17 | 0.07 | 0.11 | 0.10 | 0.01 | 0.08 | 0.05 | 0.08 | 0.15 | 0.04 | 0.04 | 0.08 | 0.04 | 0.06 |
| $NO_2$-N, MG/L | 0.01 | 0.08 | 0.0 | 0.05 | 0.0 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.03 | 0.01 | 0.04 |
| COD TOTAL MG/L | 178 | 210 | 167 | 119 | 115 | 96 | 189 | 156 | 116 | 106 | 201 | 201 | 170 | 115 | 106 |
| COD SOL. MG/L | 81 | 78 | 68 | 65 | 69 | 55 | 70 | 66 | 70 | 72 | 76 | 78 | 68 | 70 | 65 |
| TKN MG/L | 22.0 | 16.8 | 20.6 | 13.7 | 12.1 | 20.0 | 19.0 | 21.8 | 15.4 | 12.6 | 23.1 | 26.0 | 20.5 | 15.0 | 13.0 |
| TOTAL P MG/L | 5.9 | 5.0 | 7.5 | 6.5 | 6.0 | 5.8 | 7.0 | 7.1 | 6.9 | 6.0 | 5.1 | 7.1 | 6.9 | 6.0 | 6.5 |

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML.

| DATE | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AIR TEMP °C MAX/MIN | | | | | | | | | | | | | | | |
| WEATHER | | | | | | | | | | | | | | | |
| INF FLOW, MG | | | | | | | | | | | | | | | |
| EFF FLOW, MG | | | | | | | | | | | | | | | |
| $Cl_2$ DOSE MG/L | | | | | | | | | | | | | | | |
| $Cl_2$ RESIDUAL MG/L | | | | | | | | | | | | | | | |
| | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF |
| TEMP °C | | | | | | | | | | | | | | | |
| DO, MG/L | | | | | | | | | | | | | | | |
| pH | | | | | | | | | | | | | | | |
| ALKALINITY MG/L | | | | | | | | | | | | | | | |
| SUSP SOLIDS MG/L | | | | | | | | | | | | | | | |
| BOD TOTAL MG/L | | | | | | | | | | | | | | | |
| BOD, SOL MG/L | | | | | | | | | | | | | | | |
| ALGAE /ML x $10^3$ | | | | | | | | | | | | | | | |
| *FECAL COLI/100ML x $10^3$ | | | | | | | | | | | | | | | |
| *MPN/100 ML x $10^3$ | | | | | | | | | | | | | | | |
| $NH_3$-N, MG/L | | | | | | | | | | | | | | | |
| $NO_3$-N, MG/L | | | | | | | | | | | | | | | |
| $NO_2$-N, MG/L | | | | | | | | | | | | | | | |
| COD TOTAL MG/L | | | | | | | | | | | | | | | |
| COD SOL MG/L | | | | | | | | | | | | | | | |
| TKN MG/L | | | | | | | | | | | | | | | |
| TOTAL P MG/L | | | | | | | | | | | | | | | |

* EFFLUENT TOTAL COLIFORM AND MPN ARE NUMBER PER ML.

| DATE | 11/3/76 | | | | | 11/4/76 | | | | | 11/5/76 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AIR TEMP °C MAX/MIN | 2/-1 | | | | | 1/-5 | | | | | -2/-10 | | | | |
| WEATHER | Cloudy | | | | | Rain/Cloudy | | | | | Cloudy | | | | |
| INF FLOW, MG | 0.557 | | | | | 0.589 | | | | | 0.566 | | | | |
| EFF FLOW, MG | 0.111 | | | | | 0.109 | | | | | 0.111 | | | | |
| $Cl_2$ DOSE MG/L | 8.5 | | | | | 11.0 | | | | | 10.9 | | | | |
| $Cl_2$ RESIDUAL MG/L | 2.0 | | | | | 2.5 | | | | | 1.6 | | | | |
| | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF |
| TEMP °C | 13 | 8 | 8 | 8 | 8 | 11 | 8 | 8 | 8 | 8 | 11 | 8 | 8 | 8 | 8 |
| DO, MG/L | 3.1 | 0.5 | 0.9 | 0.9 | 0.6 | 0.8 | 0.4 | 0.1 | 0.9 | 0.5 | 0.1 | 0.5 | 0.1 | 0.5 | 0.4 |
| pH | 7.8 | 7.1 | 7.5 | 7.0 | 6.7 | 7.7 | 7.1 | 7.2 | 7.0 | 6.7 | 7.8 | 7.1 | 7.6 | 7.0 | 6.7 |
| ALKALINITY MG/L | 161 | 137 | 130 | 97 | 86 | 131 | 108 | 122 | 107 | 88 | 108 | 105 | 111 | 108 | 86 |
| SUSP SOLIDS MG/L | 189 | 58 | 46 | 10 | 8 | 141 | 60 | 57 | 18 | 11 | 174 | 50 | 40 | 10 | 6 |
| BOD TOTAL MG/L | 138 | 46 | 30 | 17 | 15 | 134 | 48 | 38 | 18 | 6 | 138 | 48 | 30 | 13 | 5 |
| BOD, SOL MG/L | 56 | 9 | 8 | 1 | 1 | 58 | 9 | 6 | 5 | 5 | 56 | 18 | 7 | 8 | 8 |
| ALGAE /ML x $10^3$ | — | 1310 | 1960 | 510 | 360 | — | 1960 | 1960 | 1079 | 111 | — | 1960 | 1960 | 1078 | 1078 |
| *FECAL COLI/100ML x $10^6$ | 1.5 | 0.49 | 0.13 | 0.07 | 0 | 1.5 | 0.35 | 0.09 | 0.01 | 0 | 5.1 | 0.58 | 0.11 | 0.09 | 0 |
| *MPN/100ML x $10^6$ | | | | | | | | | | | | | | | |
| $NH_3$-N, MG/L | 19.1 | 6.1 | 18.0 | 1.9 | 2.6 | 13.1 | 13.6 | 13.6 | 8.3 | 2.6 | 16.5 | 1.7 | 1.8 | 2.0 | 1.9 |
| $NO_3$-N, MG/L | 0.08 | 0.01 | 0.01 | 0.08 | 0.18 | 0.16 | 0.18 | 0.11 | 0.18 | 0.11 | 0.18 | 0.11 | 0.13 | 0.16 | 0.11 |
| $NO_2$-N, MG/L | 0.33 | 0.13 | 0.14 | 0.05 | 0.09 | 0.10 | 0.10 | 0.10 | 0.08 | 0.10 | 0.08 | 0.10 | 0.10 | 0.08 | 0.10 |
| COD TOTAL MG/L | 316 | 83 | 181 | 109 | 96 | 88 | 183 | 161 | 98 | 94 | 166 | 161 | 141 | 93 | 116 |
| COD SOL. MG/L | 98 | 71 | 66 | 71 | 91 | 116 | 58 | 69 | 53 | 59 | 107 | 91 | 71 | 93 | 91 |
| TKN MG/L | 20.4 | 16.4 | 20.5 | 13.1 | 13.2 | 16.4 | 16.9 | 15.5 | 9.6 | 13.1 | 20.4 | 15.1 | 15.1 | 13.7 | 13.1 |
| TOTAL P MG/L | 6.8 | 5.3 | 7.0 | 6.3 | 6.3 | 7.1 | 7.1 | 7.1 | 6.8 | 6.3 | 7.0 | 7.4 | 7.1 | 6.8 | 6.3 |

* EFFLUENT FECAL COLIFORM AND MPN ARE AVERAGE FOR ML's

| DATE | 7/8/74 | | | | | 10/3/74 | | | | | 12/4/74 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AIR TEMP °C MAX/MIN | 32/18 | | | | | 27/18 | | | | | 17/9 | | | | |
| WEATHER | Clear | | | | | Clear | | | | | Cloudy | | | | |
| INF FLOW, MG | 0.169 | | | | | 0.188 | | | | | 0.193 | | | | |
| EFF FLOW, MG | 0.110 | | | | | 0.107 | | | | | 0.118 | | | | |
| $Cl_2$ DOSE MG/L | 9.9 | | | | | 11.0 | | | | | 11.1 | | | | |
| $Cl_2$ RESIDUAL MG/L | 1.0 | | | | | 2.0 | | | | | 2.0 | | | | |
| | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF |
| TEMP °C | 31 | 27 | 25 | 27 | 26 | 27 | 26 | 25 | 25 | 25 | 21 | 20 | 20 | 21 | 20 |
| DO, MG/L | 0.5 | 0.5 | 0.6 | 0.9 | 0.5 | 0.6 | 0.5 | 0.6 | 0.7 | 0.6 | 0.5 | 0.5 | 0.5 | 0.6 | 0.6 |
| pH | 7.5 | 7.1 | 7.3 | 7.2 | 6.9 | 7.3 | 7.1 | 7.2 | 7.0 | 6.9 | 7.1 | 7.1 | 7.2 | 7.1 | 6.9 |
| ALKALINITY MG/L | 119 | 108 | 118 | 116 | 99 | 126 | 108 | 118 | 114 | 99 | 113 | 105 | 116 | 111 | 97 |
| SUSP SOLIDS MG/L | 193 | 69 | 41 | 30 | 9 | 113 | 65 | 36 | 9 | 5 | 117 | 48 | 33 | 10 | 6 |
| BOD TOTAL MG/L | 167 | 63 | 16 | 19 | 8 | 109 | 58 | 30 | 13 | 8 | 105 | 38 | 19 | 12 | 8 |
| BOD, SOL MG/L | 51 | 13 | 8 | 5 | 8 | 58 | 19 | 7 | 8 | 8 | 51 | 16 | 6 | 5 | 5 |
| ALGAE /ML x $10^3$ | — | 1100 | 1100 | 889 | 240 | — | 1190 | 1210 | 815 | 399 | — | 1230 | 1150 | 1060 | 1090 |
| *FECAL COLI/100ML x $10^6$ | 2.6 | 0.41 | 0.11 | 0.05 | 0 | 0.8 | 0.43 | 0.08 | 0.09 | 0 | 3.0 | 0.61 | 0.43 | 0.08 | 0 |
| *MPN/100 ML x $10^6$ | 12.0 | 0.91 | 0.19 | 0.08 | 0 | | | | | | 11.0 | 0.93 | 0.48 | 0.09 | 0 |
| $NH_3$-N, MG/L | 16.0 | 18.2 | 14.1 | 9.5 | 9.2 | 16.5 | 19.2 | 16.2 | 9.9 | 9.0 | 15.0 | 19.6 | 16.2 | 9.9 | 9.0 |
| $NO_3$-N, MG/L | 0.03 | 0.07 | 0.16 | 0.15 | 0.17 | 0.08 | 0.10 | 0.15 | 0.10 | 0.19 | 0.13 | 0.11 | 0.15 | 0.11 | 0.18 |
| $NO_2$ N, MG/L | 0.06 | 0.05 | 0.05 | 0.06 | 0.06 | 0.06 | 0.05 | 0.05 | 0.05 | 0.06 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 |
| COD TOTAL MG/L | 316 | 197 | 186 | 119 | 96 | 176 | 171 | 119 | 108 | 93 | 164 | 131 | 119 | 113 | 96 |
| COD SOL. MG/L | 118 | 91 | 69 | 38 | 39 | 81 | 68 | 60 | 55 | 51 | 119 | 101 | 69 | 58 | 51 |
| TKN MG/L | 36.9 | 29.8 | 23.0 | 18.6 | 17.9 | 36.5 | 33.6 | 27.1 | 18.8 | 13.6 | 32.8 | 27.6 | 22.3 | 18.6 | 13.6 |
| TOTAL P MG/L | 7.8 | 7.8 | 7.5 | 6.7 | 6.8 | 7.1 | 7.5 | 7.1 | 6.7 | 6.6 | 7.8 | 7.6 | 7.4 | 6.7 | 6.7 |

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML.

| DATE | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AIR TEMP °C | | | | | | | | | | | | | | | |
| WEATHER | | | | | | | | | | | | | | | |
| INF FLOW MG | | | | | | | | | | | | | | | |
| EFF FLOW MG | | | | | | | | | | | | | | | |
| CL2 DOSE MG/L | | | | | | | | | | | | | | | |
| CL2 RESIDUAL MG/L | | | | | | | | | | | | | | | |
| | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF |
| TEMP °C | | | | | | | | | | | | | | | |
| DO MG/L | | | | | | | | | | | | | | | |
| pH | | | | | | | | | | | | | | | |
| ALKALINITY MG/L | | | | | | | | | | | | | | | |
| SUSP SOLIDS MG/L | | | | | | | | | | | | | | | |
| BOD TOTAL MG/L | | | | | | | | | | | | | | | |
| BOD SOL MG/L | | | | | | | | | | | | | | | |
| ALGAL #/ML x10³ | | | | | | | | | | | | | | | |
| FECAL COLI/100 ML x10³ | | | | | | | | | | | | | | | |
| MPN/100 ML x10³ | | | | | | | | | | | | | | | |
| NH3-N MG/L | | | | | | | | | | | | | | | |
| NO3-N MG/L | | | | | | | | | | | | | | | |
| NO2-N MG/L | | | | | | | | | | | | | | | |
| COD TOTAL MG/L | | | | | | | | | | | | | | | |
| COD SOL MG/L | | | | | | | | | | | | | | | |
| TKN MG/L | | | | | | | | | | | | | | | |
| TOTAL P MG/L | | | | | | | | | | | | | | | |

* [illegible] MPN PER 100 ML

| DATE | 10/11/78 | | | | | 11/1/78 | | | | | 11/8/78 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AIR TEMP °C MAX/MIN | 4/-4 | | | | | 6/-3 | | | | | 5/-1 | | | | |
| WEATHER | Cloudy | | | | | Clear | | | | | Sunny | | | | |
| INF FLOW MG | 0.182 | | | | | 0.165 | | | | | 0.180 | | | | |
| EFF FLOW MG | 0.161 | | | | | 0.218 | | | | | 0.218 | | | | |
| CL2 DOSE MG/L | 12.6 | | | | | 10.1 | | | | | 9.0 | | | | |
| CL2 RESIDUAL MG/L | 1.0 | | | | | 1.0 | | | | | 1.0 | | | | |
| | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF |
| TEMP °C | 9.5 | 8 | 8 | 1 | 1 | 10 | 8.5 | 8 | 1 | 2 | 11 | 8 | 8 | 3 | 3 |
| DO MG/L | 0.0 | 0.5 | 0.0 | 0.0 | 0.0 | 0.5 | 0.0 | 0.5 | 0.0 | 0.0 | 0.1 | 0.5 | 0.5 | 0.5 | 0.5 |
| pH | 7.1 | 7.0 | 7.1 | 7.0 | 6.9 | 7.1 | 7.0 | 7.1 | 7.0 | 6.9 | 7.1 | 7.1 | 7.1 | 7.0 | 6.9 |
| ALKALINITY MG/L | 130 | 108 | 131 | 107 | 96 | 128 | 108 | 126 | 107 | 98 | 118 | 106 | 131 | 107 | 96 |
| SUSP SOLIDS MG/L | 170 | 86 | 86 | 11 | 18 | 68 | 84 | 37 | 17 | 18 | 160 | 85 | 32 | 13 | 12 |
| BOD TOTAL MG/L | 155 | 83 | 36 | 11 | 7 | 86 | 83 | 36 | 13 | 9 | 180 | 82 | 49 | 13 | 7 |
| BOD SOL MG/L | 68 | 18 | 6 | 5 | 5 | 69 | 16 | 9 | 8 | 6 | 87 | 18 | 7 | 8 | 5 |
| ALGAL AM x $10^3$ | — | 1200 | 530 | 861 | 630 | — | 861 | 1300 | 1100 | 865 | — | 1000 | 700 | 617 | 511 |
| FECAL COLI/100 ML x $10^3$ | 2.0 | 0.14 | 0.13 | 0.01 | 0 | 1.1 | 0.10 | 0.17 | 0.16 | 0 | 0.4 | 0.01 | 0.40 | 0.10 | 0 |
| MPN 100 ML x $10^3$ | | | | | | 0.33 | 0.18 | 0.18 | 0.17 | 0 | | | | | |
| $NH_3$-N, MG/L | 148 | 119 | 53 | 9.1 | 9.1 | 146 | 141 | 113 | 9.1 | 9.1 | 180 | 145 | 104 | 9.5 | 9.5 |
| $NO_2$-N, MG/L | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 |
| $NO_3$-N, MG/L | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 |
| COD TOTAL MG/L | 286 | 166 | 116 | 99 | 96 | 136 | 163 | 119 | 98 | 99 | 319 | 160 | 133 | 99 | 91 |
| COD SOL MG/L | 131 | 90 | 59 | 59 | 60 | 131 | 99 | 59 | 60 | 60 | 119 | 88 | 61 | 61 | 70 |
| TKN MG/L | 16.8 | 20.0 | 11.2 | 8.7 | 8.7 | 19.6 | 16.8 | 11.2 | 8.4 | 8.4 | 16.8 | 19.6 | 11.2 | 8.7 | 8.4 |
| TOTAL P MG/L | 6.7 | 6.7 | 3.0 | 0.6 | 0.6 | 6.6 | 6.7 | 6.7 | 3.6 | 0.6 | 7.1 | 6.7 | 3.7 | 0.6 | 0.6 |

* EFFLUENT FECAL COLIFORM MPN AND NUMBER PER ML

| DATE | 13/10/10 | | | | | 12/10/10 | | | | | 11/10/10 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AIR TEMP °C MAX/MIN | -17/-10 | | | | | -5/-9 | | | | | 4/-3 | | | | |
| WEATHER | Clear | | | | | Cloudy | | | | | Partly Cloudy, snow | | | | |
| INF FLOW MG | 0.311 | | | | | 0.193 | | | | | 0.146 | | | | |
| EFF FLOW MG | 0.337 | | | | | 0.207 | | | | | 0.101 | | | | |
| CL2 DOSE MG/L | 10.4 | | | | | 10.6 | | | | | — | | | | |
| CL2 RESIDUAL MG/L | 2.0 | | | | | 2.0 | | | | | 1.8 | | | | |
| | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF |
| TEMP °C | 11 | 8 | 5 | 3 | 3 | 11.5 | 8.5 | 6 | 5 | 5 | 11 | 8 | 6 | 5 | 5 |
| DO MG/L | 8.6 | 8.5 | 8.5 | 8.5 | 8.4 | 8.5 | 8.5 | 8.4 | 8.4 | 8.4 | 8.6 | 8.5 | 8.5 | 8.5 | 8.4 |
| pH | 7.1 | 7.0 | 7.1 | 7.0 | 6.7 | 7.0 | 7.0 | 7.0 | 7.0 | 6.7 | 7.1 | 6.9 | 7.0 | 7.0 | 6.9 |
| ALKALINITY MG/L | 97 | 106 | 119 | 108 | 99 | 98 | 116 | 108 | 107 | 104 | 101 | 107 | 118 | 109 | 104 |
| SUSP SOLIDS MG/L | 103 | 58 | 35 | 16 | 11 | 103 | 59 | 34 | 18 | 9 | 101 | 63 | 31 | 16 | 10 |
| BOD TOTAL MG/L | 130 | 81 | 39 | 18 | 8 | 121 | 57 | 30 | 13 | 7 | 123 | 69 | 31 | 16 | 10 |
| BOD SOL MG/L | 60 | 18 | 8 | 5 | 5 | 83 | 6 | 15 | 4 | 5 | 88 | 30 | 9 | 4 | 4 |
| ALGAL AM/L X $10^4$ | — | 0.59 | 0.90 | 0.65 | 0.19 | — | 1.36 | 1.90 | 0.67 | 0.55 | — | 1.95 | 1.10 | 0.61 | 0.65 |
| FECAL COLI/100ML $10^3$ | 6.6 | 0.10 | 0.18 | 0.13 | 0 | 6.9 | 0.30 | 0.03 | 0.13 | 0 | 6.8 | 0.47 | 0.13 | 0.04 | 0 |
| MPN /100 ML X $10^4$ | 2.2 | 0.08 | 1.1 | 0.09 | 0 | | | | | | | | | | |
| $NH_3$-N MG/L | 19.8 | 19.0 | 18.4 | 9.8 | 9.6 | 19.5 | 18.7 | 13.8 | 10.2 | 9.6 | 21.2 | 19.1 | 18.2 | 13.2 | 9.2 |
| $NO_2$-N MG/L | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 |
| $NO_3$-N MG/L | 0.15 | 0.15 | 0.15 | 0.15 | 0.10 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| COD TOTAL MG/L | 190 | 168 | 118 | 99 | 108 | 198 | 101 | 131 | 96 | 78 | 119 | 113 | 95 | 91 | 93 |
| COD SOL MG/L | 119 | 87 | 61 | 59 | 66 | 101 | 64 | 61 | 61 | 65 | 109 | 78 | 66 | 63 | 69 |
| TKN MG/L | 18.3 | 16.0 | 11.0 | 10.3 | 10.1 | 18.0 | 11.5 | 10.0 | 10.4 | 10.5 | 21.0 | 20.0 | 11.6 | 10.5 | 10.3 |
| TOTAL P MG/L | 8.1 | 7.1 | 6.9 | 6.6 | 6.5 | 8.1 | 6.8 | 6.8 | 6.7 | 6.6 | 7.1 | 6.9 | 6.9 | 6.7 | 6.6 |

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER 100 ML

| DATE | [illegible] | [illegible] | [illegible] |
|---|---|---|---|
| [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] |
| INF FLOW MG | [illegible] | [illegible] | [illegible] |
| EFF FLOW MG | [illegible] | [illegible] | [illegible] |
| CL2 DOSE MG/L | [illegible] | [illegible] | [illegible] |
| CL2 REQUIRED MG/L | [illegible] | [illegible] | [illegible] |

| | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TEMP °C | [illegible] | | | | | | | | | | | | | | |
| DO MG/L | | | | | | | | | | | | | | | |
| pH | | | | | | | | | | | | | | | |
| ALKALINITY MG/L | | | | | | | | | | | | | | | |
| SUSP SOLIDS MG/L | | | | | | | | | | | | | | | |
| BOD TOTAL MG/L | | | | | | | | | | | | | | | |
| BOD SOL MG/L | | | | | | | | | | | | | | | |
| ALGAL MG/L x 10³ | | | | | | | | | | | | | | | |
| FECAL COLI/100ML | | | | | | | | | | | | | | | |
| MPN COLI/100ML x 10⁶ | | | | | | | | | | | | | | | |
| NH3-N MG/L | | | | | | | | | | | | | | | |
| NO2-N MG/L | | | | | | | | | | | | | | | |
| NO3-N MG/L | | | | | | | | | | | | | | | |
| COD TOTAL MG/L | | | | | | | | | | | | | | | |
| COD SOL MG/L | | | | | | | | | | | | | | | |
| TKN MG/L | | | | | | | | | | | | | | | |
| TOTAL P MG/L | | | | | | | | | | | | | | | |

* [illegible] TOTAL COLIFORM AND MPN ARE NUMBER PER 100ml

| DATE | 12/17/78 | | | | | 12/31/78 | | | | | 12/31/78 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AIR TEMP °C max min | 8/-20 | | | | | 8/-15 | | | | | 7/-10 | | | | |
| WEATHER | cloudy | | | | | PM Mg cloudy | | | | | clear | | | | |
| INF FLOW MG | 0.219 | | | | | 0.181 | | | | | 0.159 | | | | |
| EFF FLOW MG | 0.196 | | | | | 0.196 | | | | | 0.176 | | | | |
| $Cl_2$ DOSE MG/L | 9.6 | | | | | 9.1 | | | | | 9.9 | | | | |
| $Cl_2$ RESIDUAL MG/L | 1.0 | | | | | 0.6 | | | | | 1.5 | | | | |
| | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF |
| TEMP °C | 10 | 8.5 | 5 | 5 | 5 | 10 | 8 | 5 | 5 | 5 | 10 | 8.5 | 5 | 5 | 5 |
| D.O. MG/L | 8.9 | 0.15 | 0.8 | 0.5 | 0.8 | 8.0 | 0.2 | 0.5 | 0.5 | 0.5 | 8.5 | 0.5 | 0.5 | 0.8 | 0.8 |
| pH | 7.0 | 6.5 | 6.9 | 7.0 | 6.7 | 7.1 | 6.5 | 6.98 | 6.9 | 6.5 | 7.0 | 6.9 | 6.9 | 7.0 | 6.7 |
| ALKALINITY MG/L | 150 | 146 | 144 | 119 | 104 | 148 | 101 | 138 | 121 | 98 | 135 | 126 | 120 | 119 | 109 |
| SUSP SOLIDS MG/L | 81 | 21 | 23 | 20 | 13 | 28 | 21 | 28 | 18 | 15 | 196 | 21 | 20 | 19 | 13 |
| BOD TOTAL MG/L | 111 | 54 | 55 | 28 | 15 | 81 | 65 | 47 | 19 | 18 | 210 | 90 | 42 | 25 | 17 |
| BOD SOL MG/L | 46 | 26 | 16 | 11 | 10 | 33 | 23 | 18 | 10 | 11 | 86 | 46 | 33 | 11 | 11 |
| ALGAL /ML x $10^3$ | — | 891 | 981 | 849 | 1056 | — | 465 | 669 | 496 | 330 | — | 588 | 990 | 601 | 594 |
| FECAL COLI/100 ML $10^3$ | 1.5 | 0.49 | 0.06 | 0.19 | 0 | 3.1 | 0.59 | 0.45 | 0.18 | 0 | 1.8 | 0.91 | 0.63 | 0.18 | 0 |
| FAVL /100 ML $10^3$ | | | | | | | | | | | | | | | |
| $NH_3$ N, MG/L | 18.5 | 15.6 | 6.9 | 1.1 | 1.6 | 18.5 | 13.9 | 13.5 | 11.9 | 1.5 | 15.6 | 11.5 | 1.5 | 1.8 | 1.1 |
| $NO_3$ N, MG/L | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| $NO_2$ $N_2$ MG/L | 0.1 | 0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| COD TOTAL MG/L | 119 | 101 | 116 | 116 | 94 | 95 | 130 | 155 | 118 | 101 | 1500 | 1000 | 130 | 116 | 101 |
| COD SOL MG/L | 68 | 49 | 30 | 28 | 69 | 36 | 105 | 69 | 60 | 68 | 185 | 112 | 69 | 30 | 28 |
| TKN MG/L | 18.0 | 16.1 | 18.5 | 18.8 | 16.7 | 18.9 | 20.8 | 13.9 | 14.9 | 14.5 | 38.5 | 21.5 | 21.5 | 16.9 | 16.5 |
| TOTAL P MG/L | 5.7 | 6.9 | 6.8 | 6.1 | 6.6 | 5.5 | 7.0 | 6.1 | 6.2 | 6.2 | 8.9 | 6.9 | 6.9 | 6.1 | 6.1 |

* EFFLUENT FECAL COLIFORM AND MPN BAC NUMBER PER 100 ML

Reproduced from best available copy.

| DATE | 1/14/15 | | | | | 1/15/15 | | | | | 1/21/15 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AIR TEMP °C AM/PM | 5/-1A | | | | | -8/-17 | | | | | 4/-2A | | | | |
| WEATHER | Cloudy | | | | | Clear | | | | | Cloudy | | | | |
| INT FLOW MG | 0.299 | | | | | 0.317 | | | | | 0.198 | | | | |
| EFF FLOW MG | 0.283 | | | | | 0.298 | | | | | 0.187 | | | | |
| CL2 DOSE MG/L | 12.8 | | | | | 31.0 | | | | | 17.8 | | | | |
| CL2 RESIDUAL MG/L | 1.0 | | | | | 1.0 | | | | | 0.8 | | | | |
| | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF |
| TEMP °C | 10 | 8 | 8 | 7 | 8 | 9 | 8 | 8 | 7 | 8 | 9 | 8 | 8 | 7 | 8 |
| DO MG/L | 3.6 | 0.1 | 0.5 | 0.1 | 0.6 | 8.9 | 0.1 | 0.1 | 0.1 | 0.1 | 8.6 | 0.1 | 0.1 | 0.1 | 0.1 |
| PH | 7.1 | 6.6 | 6.7 | 6.76 | 6.6 | 7.16 | 6.7 | 6.9 | 6.9 | 6.8 | 7.3 | 6.9 | 6.8 | 6.9 | 6.9 |
| ALKALINITY MG/L | 189 | 180 | 180 | 181 | 190 | 183 | 164 | 0.0.5 | 182 | 178 | 193 | 187 | 183 | 180 | 187 |
| SUSP SOLIDS MG/L | 180 | 15 | 10 | 16 | 11 | 178 | 35 | 20 | 17 | 16 | 18 | 19 | 22 | 19 | 15 |
| BOD TOTAL MG/L | 138 | 69 | 56 | 28 | 29 | 188 | 89 | 55 | 35 | 28 | 64 | 34 | 44 | 29 | 33 |
| BOD SOL MG/L | 38 | 6.5 | 2.9 | 1.8 | 3.5 | 60 | 8.7 | 3.9 | 1.8 | 3.8 | 17 | 8.5 | 3.1 | 1.9 | 3.6 |
| ALGAE /ML x 10^3 | — | 146 | 190 | 0.15 | 0.01 | — | 155 | 147 | 50.5 | 0.13 | — | 145 | 0.05 | 3.5 | 0.01 |
| FECAL COLI/100ML x 10^3 | 5.0 | 1.0 | 0.41 | 0.00 | 0 | 2.1 | 0.01 | 0.01 | 0.01 | 0 | 3.9 | 0.01 | 0.01 | 0.01 | 0 |
| MPN /100ML x 10^3 | | | | | | | | | | | | | | | |
| NH3-N MG/L | 28.5 | 23.6 | 11.5 | 2.0 | 1.1 | 28.0 | 26.0 | 22.1 | 0.1 | 1.0 | 19.1 | 1.1 | 0.1 | 0.1 | 0.1 |
| NO3-N MG/L | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| NO2-N MG/L | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| COD TOTAL MG/L | 180 | 93 | 100 | 40 | 39 | 181 | 118 | 113 | 0.5 | 38 | 98 | 43 | 37 | 0.1 | 0.1 |
| COD SOL MG/L | 92 | 0.8 | 0.9 | 0.1 | 0.2 | 0.1 | 0.9 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| TKN MG/L | 38.0 | 31.0 | 23.6 | 3.1 | 2.0 | 36.0 | 34.0 | 28.0 | 0.5 | 1.2 | 23.6 | 1.0 | 0.5 | 0.5 | 0.1 |
| TOTAL P MG/L | 6.9 | 3.1 | 3.1 | 0.9 | 0.9 | 7.0 | 3.8 | 3.1 | 3.0 | 1.0 | 3.9 | 3.1 | 3.9 | 1.9 | 0.1 |

* EFFLUENT FECAL COLIFORM MUST BE NON-DETECTABLE FOR 5 OF

| DATE | [illegible] | | |
|---|---|---|---|
| [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] |

| | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TEMP °C | [illegible] | | | | | | | | | | | | | | |
| DO MG/L | [illegible] | | | | | | | | | | | | | | |
| pH | [illegible] | | | | | | | | | | | | | | |
| ALKALINITY MG/L | [illegible] | | | | | | | | | | | | | | |
| SUSP SOLIDS MG/L | [illegible] | | | | | | | | | | | | | | |
| BOD TOTAL MG/L | [illegible] | | | | | | | | | | | | | | |
| BOD SOL MG/L | [illegible] | | | | | | | | | | | | | | |
| ALGAE [illegible] | [illegible] | | | | | | | | | | | | | | |
| CHLA CONC [illegible] | [illegible] | | | | | | | | | | | | | | |
| *MPN [illegible] | | | | | | | | | | | | | | | |
| NH3 N MG/L | [illegible] | | | | | | | | | | | | | | |
| NO3 N MG/L | [illegible] | | | | | | | | | | | | | | |
| NO2 N MG/L | [illegible] | | | | | | | | | | | | | | |
| COD TOTAL MG/L | [illegible] | | | | | | | | | | | | | | |
| COD SOL MG/L | [illegible] | | | | | | | | | | | | | | |
| TKN MG/L | [illegible] | | | | | | | | | | | | | | |
| TOTAL P MG/L | [illegible] | | | | | | | | | | | | | | |

* [illegible]

| DATE | 1/29/18 | | | | | 1/29/18 | | | | | 1/30/18 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AIR TEMP °C MIN/MAX | 2/-12 | | | | | 6/-10 | | | | | 1/-19 | | | | |
| WEATHER | clear | | | | | cloudy | | | | | clear | | | | |
| INF FLOW MG | 0.169 | | | | | 0.186 | | | | | 0.188 | | | | |
| EFF FLOW MG | 0.181 | | | | | 0.139 | | | | | 0.200 | | | | |
| CL2 DOSE MG/L | 12.0 | | | | | 12.0 | | | | | 14.0 | | | | |
| CL2 RESIDUAL MG/L | 2.0 | | | | | 2.5 | | | | | 3.0 | | | | |
| | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF |
| TEMP °C | 9 | 8 | 3.5 | 3 | 3 | 9 | 5 | 3 | 3 | 3 | 9 | 8 | 3 | 3 | 3 |
| DO MG/L | 8.6 | 0.2 | 0.1 | 0.1 | 0.15 | 8.9 | 0.2 | 0.1 | 0.2 | 0.3 | 9.3 | 0.1 | 0.1 | 0.1 | 0.3 |
| pH | 7.1 | 6.9 | 6.7 | 6.7 | 6.5 | 7.3 | 6.9 | 6.7 | 6.9 | 6.6 | 7.0 | 6.9 | 6.9 | 6.9 | 6.7 |
| ALKALINITY MG/L | 118 | 165 | 98 | 167 | 126 | 110 | 155 | 159 | 165 | 101 | 96 | 90 | 96 | 86 | 88 |
| SUSP SOLIDS MG/L | 137 | 20 | 11 | 17 | 13 | 121 | 26 | 18 | 17 | 16 | 86 | 18 | 19 | 13 | 11 |
| BOD TOTAL MG/L | 138 | 89 | 66 | 35 | 40 | 131 | 89 | 53 | 31 | 46 | 89 | 87 | 41 | 19 | 21 |
| BOD SOL MG/L | 37 | 37 | 33 | 15 | 35 | 80 | 66 | 41 | 26 | 29 | 16 | 45 | 31 | 15 | 18 |
| ALGAL AVG $\times 10^3$ | — | 50 | 181 | 550 | 695 | — | 307 | 337 | 451 | 650 | — | 189 | 891 | 816 | 870 |
| FECAL COLI/100ML $\times 10^3$ | 100 | 0.19 | 0.37 | 0.16 | 0 | 2.1 | 0.9 | 0.66 | 0.15 | 0 | 5.9 | 1.0 | 0.08 | 0.30 | 0 |
| MPN/100ML $\times 10^3$ | | | | | | | | | | | | | | | |
| $NH_3$-N MG/L | 35.6 | 34.5 | 33.0 | 17.6 | 19.6 | 35.6 | 33.0 | 17.6 | 18.0 | 19.6 | 33.9 | 33.6 | 31.9 | 17.9 | 19.6 |
| $NO_3$-N MG/L | <0.1 | <0.1 | <0.1 | 0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.2 |
| $NO_2$-N MG/L | <0.1 | <0.1 | <0.1 | 0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| COD TOTAL MG/L | 191 | 138 | 112 | 108 | 115 | 193 | 180 | 118 | 96 | 116 | 91 | 129 | 108 | 91 | 101 |
| COD SOL MG/L | 131 | 88 | 88 | 79 | 90 | 111 | 96 | 88 | 78 | 92 | 81 | 87 | 89 | 69 | 91 |
| TKN MG/L | 35.6 | 35.1 | 34.0 | 19.8 | 20.0 | 35.6 | 33.0 | 33.6 | 19.8 | 19.6 | 33.9 | 33.9 | 31.9 | 19.6 | 20.1 |
| TOTAL P MG/L | 6.6 | 7.1 | 7.1 | 7.1 | 7.1 | 6.7 | 6.7 | 7.1 | 7.1 | 7.0 | 7.2 | 6.9 | 7.0 | 7.1 | 7.0 |

* EFFLUENT TSS, COLIFORM AND E.COLI NUMBERS PER 100mL

| DATE | 2/8/78 | | | | | 2/11/78 | | | | | 2/15/78 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AIR TEMP °C MIN/MAX | -1/-3.0 | | | | | 0/-3.0 | | | | | -7/-2.0 | | | | |
| WEATHER | Clear | | | | | | | | | | Cloudy | | | | |
| INF FLOW MG | 0.181 | | | | | 0.161 | | | | | 0.181 | | | | |
| EFF FLOW MG | 0.169 | | | | | 0.150 | | | | | 0.153 | | | | |
| CL2 DOSE MG/L | 3.0 | | | | | 4.0 | | | | | 4.9 | | | | |
| CL2 RESIDUAL MG/L | 0.8 | | | | | 2.0 | | | | | 2.0 | | | | |
| | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF |
| TEMP °C | 9 | 4 | 3 | 3 | 3 | 9 | 3 | 3 | 3 | 3 | 8 | 3 | 3 | 3 | 3 |
| DO MG/L | 0.3 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.1 | 0.1 | 0.3 | 0.4 | 0.1 | 0.1 | 0.1 | 0.1 |
| pH | 7.1 | 6.9 | 6.9 | 6.9 | 6.8 | 7.1 | 6.7 | 6.7 | 6.7 | 6.7 | 7.0 | 6.7 | 6.8 | 6.7 | 6.8 |
| ALKALINITY MG/L | 118 | 133 | 107 | 108 | 105 | 113 | 86 | 124 | 107 | 98 | 130 | 127 | 121 | 107 | 96 |
| SUSP SOLIDS MG/L | 103 | 31 | 23 | 18 | 16 | 100 | 18 | 19 | 13 | 9 | 107 | 18 | 13 | 18 | 10 |
| BOD TOTAL MG/L | 130 | 80 | 51 | 39 | 81 | 121 | 77 | 54 | 53 | 46 | 101 | 71 | 59 | 49 | 41 |
| BOD SOL MG/L | 59 | 60 | 38 | 31 | 36 | 51 | 35 | 37 | 39 | 43 | 59 | 60 | 50 | 45 | 40 |
| ALGAE #/ML x $10^3$ | — | 159 | 190 | 360 | 381 | — | 616 | 159 | 183 | 360 | — | 107 | 176 | 153 | 381 |
| FECAL COLI/100ML $10^3$ | 3.6 | 0.96 | 0.96 | 0.81 | 0 | 1.7 | 0.68 | 0.68 | 0.085 | 0 | 3.5 | 0.90 | 0.68 | 0.40 | 0 |
| FIFI COLI x $10^3$ | | | | | | | | | | | | | | | |
| NH3-N MG/L | 18.7 | 18.1 | 13.5 | 19.1 | 19.3 | 21.1 | 18.0 | 18.5 | 19.1 | 20.5 | 19.5 | 17.9 | 21.9 | 19.5 | 20.0 |
| NO3-N MG/L | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| NO2-N MG/L | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| COD TOTAL MG/L | 227 | 187 | 108 | 98 | 118 | 200 | 118 | 136 | 127 | 128 | 174 | 189 | 138 | 108 | 151 |
| COD SOL MG/L | 109 | 96 | 80 | 58 | 87 | 80 | 113 | 107 | 103 | 106 | 83 | 55 | 105 | 101 | 115 |
| TKN MG/L | 24.0 | 23.2 | 21.1 | 16.8 | 18.9 | 23.9 | 24.1 | 21.9 | 20.6 | 20.0 | 21.6 | 23.2 | 20.0 | 21.6 | 23.2 |
| TOTAL P MG/L | 3.3 | 3.1 | 2.8 | 2.1 | 2.8 | 3.8 | 3.0 | 2.6 | 2.8 | 2.6 | 4.3 | 4.9 | 3.3 | 2.8 | 3.8 |

* ESTIMATED TOTAL COLIFORM AND MPN ARE NUMBER PER 100ml

| DATE | 12/15/15 | | | | | 1/16/16 | | | | | 1/19/16 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AIR TEMP °C MIN/MAX | -8/-5 | | | | | 7/-10 | | | | | 8/-10 | | | | |
| WEATHER | Clear | | | | | Snow | | | | | Clear | | | | |
| INF FLOW MG | 0.132 | | | | | 0.110 | | | | | 0.114 | | | | |
| EFF FLOW MG | 0.135 | | | | | 0.138 | | | | | 0.139 | | | | |
| CL2 DOSE MG/L | 66.6 | | | | | 66.6 | | | | | 66.6 | | | | |
| CL2 RESIDUAL MG/L | 1.0 | | | | | 1.0 | | | | | 1.0 | | | | |
| | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF |
| TEMP °C | 9 | 2 | 2 | 2 | 2 | 9 | 2 | 2 | 2 | 2 | 9 | 2 | 2 | 2 | 2 |
| DO MG/L | 8.9 | 8.2 | 8.2 | 8.1 | 8.2 | 8.8 | 8.1 | 8.1 | 8.2 | 8.1 | 8.2 | 8.2 | 8.2 | 8.1 | 8.2 |
| PH | 7.2 | 6.7 | 6.7 | 6.7 | 6.8 | 7.0 | 6.9 | 6.9 | 6.9 | 6.8 | 7.2 | 6.9 | 6.9 | 6.9 | 6.7 |
| ALKALINITY MG/L | 181 | 180 | 134 | 130 | 97 | 104 | 198 | 180 | 169 | 125 | 118 | 135 | 96 | 108 | 98 |
| SUSP SOLIDS MG/L | 181 | 88 | 18 | 18 | 10 | 198 | 31 | 19 | 21 | 11 | 63 | 20 | 8 | 20 | 9 |
| BOD TOTAL MG/L | 198 | 92 | 60 | 61 | 58 | 133 | 63 | 58 | 56 | 58 | 96 | 96 | 66 | 66 | 58 |
| BOD SOL MG/L | 81 | 69 | 63 | 63 | 58 | 33 | 37 | 31 | 37 | 81 | 31 | 63 | 63 | 38 | 86 |
| ALGAL /ML x10³ | — | — | 366 | 609 | 295 | — | 130 | 100 | 810 | 380 | — | 393 | 381 | 781 | 908 |
| *FECAL COLI/100ML x10³ | 2.9 | 0.91 | 0.73 | 0.56 | 0 | 3.85 | 1.1 | 0.18 | 0.05 | 0 | 2.9 | 1.1 | 0.46 | 0.01 | 0 |
| *MPN /100 ML x10³ | | | | | | | | | | | | | | | |
| NH3-N, MG/L | | | | | | 0.9 | 21.8 | 20.6 | 21.1 | 21.8 | 23.3 | 23.6 | 23.8 | 20.1 | 21.2 |
| NO3-N, MG/L | | | | | | 10.1 | 10.1 | 10.1 | 10.1 | 10.1 | 10.1 | 10.1 | 10.1 | 10.1 | 10.1 |
| NO2-N, MG/L | | | | | | 10.1 | 10.1 | 10.1 | 10.1 | 10.1 | 10.1 | 10.1 | 10.1 | 10.1 | 10.1 |
| COD TOTAL MG/L | | | | | | 613 | 310 | 178 | 176 | 88 | 180 | 183 | 189 | 186 | 88 |
| COD SOL MG/L | | | | | | 69 | 116 | 101 | 89 | 118 | 87 | 118 | 126 | 98 | 118 |
| TKN MG/L | | | | | | 19.0 | 36.8 | 28.0 | 33.6 | 32.8 | 32.8 | 38.0 | 31.6 | 29.6 | 29.6 |
| TOTAL P MG/L | | | | | | 8.1 | 7.6 | 7.1 | 7.0 | 7.0 | 8.8 | 8.7 | 7.8 | 7.8 | 7.8 |

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER 100 ML

| DATE | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| [illegible] | | | | | | | | | | | | | | | |
| [illegible] | | | | | | | | | | | | | | | |
| INF FLOW MGD | | | | | | | | | | | | | | | |
| EFF FLOW MGD | | | | | | | | | | | | | | | |
| CL2 DOSE MG/L | | | | | | | | | | | | | | | |
| CL2 RESIDUAL MG/L | | | | | | | | | | | | | | | |
| | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF |
| TEMP °C | | | | | | | | | | | | | | | |
| DO MG/L | | | | | | | | | | | | | | | |
| PH | | | | | | | | | | | | | | | |
| ALKALINITY MG/L | | | | | | | | | | | | | | | |
| SUSP SOLIDS MG/L | | | | | | | | | | | | | | | |
| BOD TOTAL MG/L | | | | | | | | | | | | | | | |
| BOD SOL MG/L | | | | | | | | | | | | | | | |
| ALGAL /ML x E3 | | | | | | | | | | | | | | | |
| FECAL COLIFORM/100ML | | | | | | | | | | | | | | | |
| MPN COLIFORM/100* | | | | | | | | | | | | | | | |
| NH3-N MG/L | | | | | | | | | | | | | | | |
| NO3-N MG/L | | | | | | | | | | | | | | | |
| NO2-N MG/L | | | | | | | | | | | | | | | |
| COD TOTAL MG/L | | | | | | | | | | | | | | | |
| COD SOL MG/L | | | | | | | | | | | | | | | |
| TKN MG/L | | | | | | | | | | | | | | | |
| TOTAL P MG/L | | | | | | | | | | | | | | | |

* [illegible]

| DATE | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| [illegible] | | | | | | | | | | | | | | | |
| [illegible] | | | | | | | | | | | | | | | |
| INF FLOW MG | | | | | | | | | | | | | | | |
| EFF FLOW MG | | | | | | | | | | | | | | | |
| [illegible] | | | | | | | | | | | | | | | |
| [illegible] | | | | | | | | | | | | | | | |
| | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF |
| TEMP °C | | | | | | | | | | | | | | | |
| D.O. MG/L | | | | | | | | | | | | | | | |
| pH | | | | | | | | | | | | | | | |
| ALKALINITY MG/L | | | | | | | | | | | | | | | |
| SUSP SOLIDS MG/L | | | | | | | | | | | | | | | |
| BOD TOTAL MG/L | | | | | | | | | | | | | | | |
| BOD SOL MG/L | | | | | | | | | | | | | | | |
| ALGAL AVG x $10^3$ | | | | | | | | | | | | | | | |
| FECAL COLI/100 ML x $10^3$ | | | | | | | | | | | | | | | |
| TOT COLI/100 ML x $10^3$ | | | | | | | | | | | | | | | |
| [illegible] | | | | | | | | | | | | | | | |
| $NO_3$ N MG/L | | | | | | | | | | | | | | | |
| $NO_2$ N MG/L | | | | | | | | | | | | | | | |
| COD TOTAL MG/L | | | | | | | | | | | | | | | |
| COD SOL MG/L | | | | | | | | | | | | | | | |
| TKN MG/L | | | | | | | | | | | | | | | |
| TOTAL P MG/L | | | | | | | | | | | | | | | |

* [illegible]

| DATE | 5/9/16 | | | | | 5/11/16 | | | | | 5/13/16 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AIR TEMPERATURE °C | 9/8 | | | | | 7/8 | | | | | 8/0 | | | | |
| WEATHER | clear | | | | | Cloudy | | | | | Rainy Cloudy | | | | |
| INF FLOW MG | 0.088 | | | | | 0.070 | | | | | 0.107 | | | | |
| EFF FLOW MG | 0.177 | | | | | 0.133 | | | | | 0.177 | | | | |
| CL2 DOSE MG/L | 60.9 | | | | | 59.9 | | | | | 0.0 | | | | |
| CL2 RESIDUAL MG/L | 0.0 | | | | | 0.0 | | | | | 3.0 | | | | |
| | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF |
| TEMP °C | 7 | 5.0 | 5 | 5 | 5 | 7 | 5.0 | 5 | 5 | 5 | 5 | 4 | 5 | 5 | 5 |
| DO MG/L | 6.9 | 6.5 | 6.4 | 6.5 | 6.5 | 7.4 | 6.4 | 6.5 | 6.5 | 6.5 | 7.1 | 6.5 | 6.5 | 6.5 | 6.5 |
| pH | 6.6 | 6.5 | 6.7 | 6.6 | 6.7 | 6.5 | 6.6 | 6.6 | 6.6 | 6.7 | 6.5 | 6.6 | 6.6 | 6.6 | 6.7 |
| ALKALINITY MG/L | 76 | 116 | 104 | 109 | 81 | 68 | 118 | 101 | 105 | 92 | 88 | 110 | 105 | 97 | 91 |
| SUSP SOLIDS MG/L | 192 | 21 | 8 | 6 | 9 | 138 | 17 | 10 | 8 | 9 | 91 | 18 | 11 | 10 | 9 |
| BOD TOTAL MG/L | 138 | 51 | 28 | 30 | 15 | 118 | 69 | 50 | 51 | 38 | 110 | 57 | 45 | 43 | 39 |
| BOD SOL MG/L | 89 | 45 | 21 | 17 | 16 | 82 | 41 | 21 | 19 | 17 | 83 | 41 | 19 | 21 | 21 |
| ALGAL /ML x $10^3$ | — | 190 | 108 | 191 | 105 | — | 187 | 190 | 197 | 119 | — | 191 | 169 | 174 | 144 |
| FECAL COLI/100ML x $10^3$ | 167 | 158 | 0.09 | 0.06 | 0 | 1.8 | 0.96 | 0.05 | 0.03 | 0 | 118 | 78 | 0.10 | — | 0 |
| TOT COLIF x $10^3$ | | | | | | | | | | | | | | | |
| $NH_3$-N MG/L | 9.6 | 13.9 | 11.1 | 10.5 | 11.0 | 9.6 | 13.5 | 11.1 | 11.0 | 11.0 | 10.6 | 13.1 | 11.3 | 11.7 | 11.2 |
| $NO_3$-N MG/L | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| $NO_2$-N MG/L | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| COD TOTAL MG/L | 349 | 98 | 61 | 83 | 80 | 196 | 107 | 101 | 88 | 83 | 110 | 88 | 80 | 85 | 84 |
| COD SOL MG/L | 93 | 51 | 36 | 38 | 38 | 76 | 41 | 43 | 38 | 42 | 51 | 51 | 42 | 40 | 42 |
| TKN MG/L | 11.1 | 14.1 | 13.1 | 13.6 | 14.1 | 11.6 | 14.1 | 13.1 | 13.6 | 13.9 | 13.1 | 14.1 | 13.1 | 13.6 | 14.1 |
| TOTAL P MG/L | 4.6 | 4.3 | 4.1 | 4.5 | 4.7 | 4.2 | 4.1 | 4.4 | 4.7 | 4.6 | 4.1 | 4.1 | 4.1 | 4.7 | 4.7 |

| DATE | 3/14/75 | | | | | 3/15/75 | | | | | 3/16/75 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AIR TEMP °C MAX-MIN | 10/5 | | | | | 8/0 | | | | | 15/1 | | | | |
| WEATHER | cloudy | | | | | cloudy | | | | | cloudy | | | | |
| INF FLOW MG | 0.111 | | | | | 0.147 | | | | | 0.180 | | | | |
| EFF FLOW MG | 0.177 | | | | | 0.173 | | | | | 0.174 | | | | |
| CL2 DOSE MG/L | 4.0 | | | | | 4.0 | | | | | 4.0 | | | | |
| CL2 RESIDUAL MG/L | 1.0 | | | | | 1.0 | | | | | 1.0 | | | | |
| | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF |
| TEMP °C | 7 | 4.5 | 1 | 1 | 1 | 7 | 4.5 | 1 | 1 | 1.5 | 7 | 4 | 1 | 1 | 1 |
| DO MG/L | 6.3 | 0.15 | 0.1 | 0.1 | 5.6 | 6.0 | 0.1 | 0.1 | 0.1 | 0.15 | 6.0 | 0.1 | 0.1 | 0.1 | 0.1 |
| PH | 6.9 | 6.6 | 6.6 | 6.6 | 6.7 | 7.1 | 6.6 | 6.6 | 6.6 | 6.7 | 6.9 | 6.6 | 6.6 | 6.6 | 6.7 |
| ALKALINITY MG/L | 69 | 118 | 135 | 140 | 138 | 111 | 135 | 145 | 145 | 93 | 69 | 116 | 135 | 140 | 138 |
| SUSP SOLIDS MG/L | 18 | 10 | 10 | 7 | 8 | 131 | 15 | 7 | 8 | 8 | 67 | 14 | 11 | 11 | 8 |
| BOD TOTAL MG/L | 108 | 67 | 63 | 68 | 68 | 113 | 78 | 66 | 68 | 68 | 76 | 68 | 61 | 68 | 68 |
| BOD SOL MG/L | 76 | 49 | 46 | 51 | 51 | 90 | 51 | 54 | 61 | 49 | 57 | 56 | 49 | 53 | 51 |
| ALGAE /ML x $10^3$ | — | 187 | 91 | 181 | 166 | — | 181 | 183 | 93 | 181 | — | 110 | 111 | 110 | 144 |
| FECAL COLI/100 ML x $10^3$ | 4.3 | 1.8 | 1.0 | 0.41 | 0 | 2.8 | 1.0 | 0.18 | 0.41 | 0 | 1.3 | 0.41 | 0.18 | 0.18 | 0 |
| MPN /100 ML x $10^3$ | | | | | | | | | | | | | | | |
| $NH_3$-N MG/L | 13.5 | 13.5 | 11.0 | 10.9 | 11.0 | 9.6 | 9.1 | 10.7 | 11.0 | 11.0 | 9.1 | 11.4 | 10.8 | 10.4 | 11.3 |
| $NO_2$ N MG/L | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| $NO_3$ N MG/L | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| COD TOTAL MG/L | 111 | 149 | 135 | 152 | 141 | 119 | 141 | 149 | 125 | 110 | 138 | 58 | 80 | 144 | |
| COD SOL MG/L | 74 | 84 | 88 | 108 | 98 | 86 | 108 | 108 | 108 | 88 | 78 | 84 | 94 | 108 | |
| TKN MG/L | 11.2 | 11.4 | 10.0 | 10.2 | 10.9 | 10.6 | 11.0 | 10.0 | 10.0 | 11.0 | 10.2 | 10.1 | 10.6 | 10.2 | 10.8 |
| TOTAL P MG/L | 8.8 | 8.8 | 6.5 | 6.6 | 6.5 | 8.2 | 8.8 | 6.1 | 6.2 | 6.2 | 8.8 | 8.1 | 8.3 | 6.5 | 6.2 |

* EFFLUENT FECAL COLIFORM WAS NO ONE HUNDRED PER ML

| DATE | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AIR TEMP °C AM/PM | | | | | | | | | | | | | | | |
| WEATHER | | | | | | | | | | | | | | | |
| INF FLOW MG | | | | | | | | | | | | | | | |
| EFF FLOW MG | | | | | | | | | | | | | | | |
| CL2 DOSE MG/L | | | | | | | | | | | | | | | |
| CL2 RESIDUAL MG/L | | | | | | | | | | | | | | | |
| | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF |
| TEMP °C | | | | | | | | | | | | | | | |
| DO MG/L | | | | | | | | | | | | | | | |
| pH | | | | | | | | | | | | | | | |
| ALKALINITY MG/L | | | | | | | | | | | | | | | |
| SUSP SOLIDS MG/L | | | | | | | | | | | | | | | |
| BOD TOTAL MG/L | | | | | | | | | | | | | | | |
| BOD SOL MG/L | | | | | | | | | | | | | | | |
| ALGAE AV x 10³ | | | | | | | | | | | | | | | |
| FECAL COLIFORM x 10³ | | | | | | | | | | | | | | | |
| TOTAL COLIFORM x 10³ | | | | | | | | | | | | | | | |
| NH3 N MG/L | | | | | | | | | | | | | | | |
| NO3 N MG/L | | | | | | | | | | | | | | | |
| NO2 N MG/L | | | | | | | | | | | | | | | |
| COD TOTAL MG/L | | | | | | | | | | | | | | | |
| COD SOL MG/L | | | | | | | | | | | | | | | |
| TKN MG/L | | | | | | | | | | | | | | | |
| TOTAL P MG/L | | | | | | | | | | | | | | | |

| DATE | 1/31/78 | | | | | 2/1/78 | | | | | 2/2/78 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AIR TEMP °C | 7/C | | | | | 9/8 | | | | | 7/4 | | | | |
| WEATHER | Rain | | | | | Partly cloudy | | | | | cloudy | | | | |
| INF FLOW MG | 0.138 | | | | | 0.167 | | | | | 0.188 | | | | |
| EFF FLOW MG | 0.91 | | | | | 0.119 | | | | | 0.139 | | | | |
| CL2 DOSE MG/L | 3.5 | | | | | 3.5 | | | | | 4.0 | | | | |
| CL2 RESIDUAL MG/L | 1.0 | | | | | 1.0 | | | | | 1.0 | | | | |
| | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF |
| TEMP °C | 7 | 8 | 8 | 8 | 8 | 7 | 8 | 8 | 8 | 8 | 7 | 8 | 8 | 8 | 8 |
| DO MG/L | 6.0 | 6.8 | 7.1 | 7.1 | 6.1 | 6.7 | 6.8 | 6.8 | 6.7 | 6.8 | 6.6 | 6.8 | 6.8 | 6.6 | 6.8 |
| PH | 6.1 | 6.5 | 6.6 | 6.6 | 6.7 | 6.1 | 6.3 | 6.3 | 6.3 | 6.7 | 6.3 | 6.5 | 6.5 | 6.3 | 6.7 |
| ALKALINITY MG/L | 81 | 100 | 106 | 110 | 91 | 83 | 110 | 113 | 114 | 93 | 91 | 108 | 109 | 106 | 96 |
| SUSP SOLIDS MG/L | 118 | 18 | 18 | 11 | 9 | 116 | 16 | 15 | 12 | 9 | 116 | 16 | 18 | 11 | 9 |
| BOD TOTAL MG/L | 189 | 91 | 88 | 81 | 81 | 190 | 89 | 83 | 86 | 83 | 181 | 81 | 81 | 86 | 83 |
| BOD SOL MG/L | 83 | 33 | 34 | 30 | 31 | 89 | 33 | 33 | 31 | 33 | 83 | 30 | 29 | 28 | 27 |
| ALGAL AL x 10³ | — | 189 | 180 | 90 | 111 | — | 189 | 118 | 113 | 100 | — | 106 | 140 | 183 | 100 |
| †FECAL COLIFORM x 10³ | 888 | 19 | 38 | 888 | 0 | 876 | 189 | 0.6 | 0.8 | 0 | 888 | 116 | 168 | 881 | 0 |
| †TOTAL COLIFORM x 10³ | | | | | | | | | | | | | | | |
| NH3-N MG/L | 0.8 | 0.1 | 0.1 | 0.1 | 0.1 | 0.8 | 0.1 | 0.1 | 0.1 | 0.1 | 0.8 | 0.1 | 0.1 | 0.1 | 0.1 |
| NO2-N MG/L | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| NO3-N MG/L | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| COD TOTAL MG/L | 111 | 96 | 118 | 88 | 96 | 163 | 118 | 118 | 118 | 101 | 163 | 118 | 117 | 109 | 113 |
| COD SOL MG/L | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 |
| TKN MG/L | 118 | 116 | 96 | 116 | 116 | 116 | 116 | 116 | 116 | 116 | 116 | 116 | 116 | 116 | 116 |
| TOTAL P MG/L | 8.8 | 8.8 | 8.8 | 8.8 | 8.8 | 8.8 | 8.8 | 8.8 | 8.8 | 8.8 | 8.8 | 8.8 | 8.8 | 8.8 | 8.8 |

* [illegible] TOTAL COLIFORM AND NH3 WERE PERFORMED FOR M[illegible]

| DATE | 4/2/16 | | | | | 4/6/16 | | | | | 4/4/16 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AIR TEMP °C MAX/MIN | 9/-9 | | | | | 15/1 | | | | | 8/4 | | | | |
| WEATHER | clear | | | | | Rain | | | | | flurries | | | | |
| INF FLOW MG | 0.242 | | | | | 0.242 | | | | | 1.4 | | | | |
| EFF FLOW MG | 0.190 | | | | | 0.159 | | | | | — | | | | |
| Cl$_2$ DOSE MG/L | 59.6 | | | | | 59.0 | | | | | — | | | | |
| Cl$_2$ RESIDUAL MG/L | 3.0 | | | | | 4.0 | | | | | 0 | | | | |
| | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF |
| TEMP °C | 9 | 8 | 8 | 8 | 8 | 9 | 10 | 10 | 8 | 8 | 7 | 8 | 8 | 8 | 8 |
| DO MG/L | 8.8 | 0.5 | 0.4 | 0.4 | 0.4 | 8.0 | 0.5 | 0.4 | 0.4 | 0.4 | 8.7 | 0.5 | 0.4 | 0.4 | 0.4 |
| pH | 6.6 | 6.5 | 6.5 | 6.5 | 6.5 | 6.3 | 6.4 | 6.5 | 6.4 | 6.5 | 6.0 | 6.4 | 6.5 | 6.5 | 6.7 |
| ALKALINITY MG/L | 98 | 105 | 106 | 109 | 79 | 68 | 117 | 130 | 131 | 98 | 88 | 119 | 118 | 116 | 114 |
| SUSP SOLIDS MG/L | 99 | 16 | 16 | 13 | 11 | 116 | 19 | 15 | 13 | 12 | 300 | 11 | 14 | 7 | 14 |
| BOD TOTAL MG/L | 100 | 69 | 67 | 69 | 55 | 129 | 68 | 63 | 61 | 53 | 140 | 61 | 63 | 63 | 57 |
| BOD SOL MG/L | 55 | 39 | 51 | 53 | 41 | 55 | 46 | 44 | 46 | 44 | 11 | 52 | 45 | 50 | 45 |
| ALGAE /ML x10$^3$ | — | 230 | 197 | 169 | 183 | — | 107 | 84.8 | 81.1 | 7.1 | — | 18.6 | 18 | 6.7 | 14.8 |
| *FECAL COLI/100ML x10$^3$ | 2.11 | 0.19 | 0.19 | 0.11 | 0 | 3.45 | 1.30 | 1.16 | 0.69 | 0.69 | 0.69 | 0.2 | 0.46 | 0.46 | 0.23 |
| *MPN /100 ML x10$^3$ | | | | | | | | | | | | | | | |
| $NH_3$-N MG/L | 20.4 | 19.0 | 19.4 | 19.7 | 19.8 | 19.8 | 19.6 | 19.5 | 19.7 | 19.1 | 19.7 | 19.8 | 19.8 | 19.9 | 20.0 |
| $NO_3$-N MG/L | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| $NO_2$-N MG/L | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| COD TOTAL MG/L | 169 | 159 | 138 | 136 | 110 | 145 | 145 | 136 | 145 | 141 | 140 | 141 | 131 | 143 | 145 |
| COD SOL MG/L | 93 | 91 | 90 | 88 | 78 | 91 | 98 | 90 | 94 | 93 | 73 | 90 | 94 | 91 | 98 |
| TKN MG/L | 26.9 | 24.1 | 23.8 | 24.0 | 24.0 | 28.0 | 26.5 | 27.0 | 28.1 | 27.6 | 28.4 | 27.0 | 27.1 | 27.4 | 27.9 |
| TOTAL P MG/L | 8.0 | 4.8 | 4.9 | 5.4 | 5.5 | 8.3 | 4.6 | 4.7 | 5.4 | 5.5 | 7.3 | 4.3 | 4.7 | 5.1 | 5.1 |

* EFFLUENT FECAL COLIFORM AND MPN NOT CONVERTED FOR TCL

| DATE | 4/6/15 | | | | | 4/8/15 | | | | | 4/13/15 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
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| | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF |
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* [illegible]

| DATE | 4/8/15 | | | | | 4/9/15 | | | | | 4/10/15 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| [illegible] | 1/8 | | | | | 1/8 | | | | | 1/8 | | | | |
| [illegible] | clear | | | | | Partly cloudy | | | | | cloudy | | | | |
| [illegible] | 0.183 | | | | | 0.263 | | | | | 0.293 | | | | |
| [illegible] | 0.168 | | | | | 0.178 | | | | | 0.210 | | | | |
| [illegible] | 9.9 | | | | | 14.1 | | | | | 14.1 | | | | |
| [illegible] | 7.0 | | | | | 7.0 | | | | | 7.0 | | | | |
| | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF |
| TEMP °C | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 |
| DO MG/L | 6.0 | 6.3 | 6.0 | 6.3 | 6.3 | 6.0 | 6.3 | 6.1 | 6.0 | 6.0 | 6.0 | 6.1 | 6.1 | 6.3 | 6.3 |
| pH | 6.5 | 6.5 | 6.6 | 6.6 | 6.5 | 6.6 | 6.5 | 6.5 | 6.5 | 6.7 | 6.5 | 6.5 | 6.6 | 6.6 | 6.7 |
| ALKALINITY MG/L | 69 | 111 | 111 | 118 | 93 | 91 | 111 | 109 | 111 | 91 | 93 | 118 | 118 | 116 | 116 |
| SUSP SOLIDS MG/L | 10 | 11 | 10 | 11 | 10 | 10 | 10 | 8 | 10 | 10 | 10 | 11 | 10 | 11 | 10 |
| BOD TOTAL MG/L | 36 | 41 | 46 | 44 | 41 | 41 | 41 | 36 | 36 | 36 | 39 | 41 | 39 | 41 | 36 |
| BOD SOL MG/L | 14 | 17 | 16 | 17 | 16 | 17 | 19 | 14 | [illegible] | 14 | 19 | 19 | 19 | [illegible] | [illegible] |
| ALGAL [illegible] | [illegible] | 14 | [illegible] | [illegible] | [illegible] | [illegible] | 41 | [illegible] | [illegible] | 14 | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | | | | | | | | | | | | | | | |
| [illegible] | | | | | | | | | | | | | | | |
| NH3 N MG/L | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| NO3 N MG/L | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| NO2 N MG/L | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| COD TOTAL MG/L | 84 | 119 | [illegible] | 116 | 119 | 97 | 116 | 111 | 116 | 111 | 116 | 116 | 116 | 116 | 116 |
| COD SOL MG/L | 77 | 78 | 84 | 84 | 77 | 84 | 78 | 84 | 77 | 84 | 84 | 78 | 84 | 84 | 84 |
| TKN MG/L | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| TOTAL P MG/L | 10 | 84 | 81 | 81 | 84 | 10 | 84 | 84 | 84 | 84 | 10 | 84 | 10 | 10 | 10 |

[illegible]

| DATE | [illegible] | | | | | [illegible] | | | | | [illegible] | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RET. SUP. [illegible] | [illegible] | | | | | [illegible] | | | | | [illegible] | | | | |
| WEATHER | [illegible] | | | | | [illegible] | | | | | [illegible] | | | | |
| INF. FLOW MG | [illegible] | | | | | [illegible] | | | | | [illegible] | | | | |
| EFF. FLOW MG | [illegible] | | | | | [illegible] | | | | | [illegible] | | | | |
| $Cl_2$ DOSE MG/L | [illegible] | | | | | [illegible] | | | | | [illegible] | | | | |
| $Cl_2$ RESIDUAL MG/L | [illegible] | | | | | [illegible] | | | | | [illegible] | | | | |
| | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF |
| TEMP °C | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| D.O. MG/L | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| pH | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| ALKALINITY MG/L | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| SUSP. SOLIDS MG/L | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| BOD TOTAL MG/L | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| BOD SOL. MG/L | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| ALGAE [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| *FECAL COLIFORM [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| *[illegible] | | | | | | | | | | | | | | | |
| $NH_3$-N MG/L | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| $NO_2$-N MG/L | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| $NO_3$-N MG/L | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| COD TOTAL MG/L | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| COD SOL. MG/L | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| TKN MG/L | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| TOTAL P MG/L | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |

* [illegible]

| DATE | [illegible] | [illegible] | [illegible] |
|---|---|---|---|
| [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] |

| | [illegible] | | | | | [illegible] | | | | | [illegible] | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| [illegible] | [illegible] | | | | | [illegible] | | | | | [illegible] | | | | |
| [illegible] | [illegible] | | | | | [illegible] | | | | | [illegible] | | | | |
| [illegible] | [illegible] | | | | | [illegible] | | | | | [illegible] | | | | |
| [illegible] | [illegible] | | | | | [illegible] | | | | | [illegible] | | | | |
| [illegible] | [illegible] | | | | | [illegible] | | | | | [illegible] | | | | |
| [illegible] | [illegible] | | | | | [illegible] | | | | | [illegible] | | | | |
| [illegible] | [illegible] | | | | | [illegible] | | | | | [illegible] | | | | |
| [illegible] | [illegible] | | | | | [illegible] | | | | | [illegible] | | | | |
| [illegible] | [illegible] | | | | | [illegible] | | | | | [illegible] | | | | |
| [illegible] | [illegible] | | | | | [illegible] | | | | | [illegible] | | | | |
| [illegible] | [illegible] | | | | | [illegible] | | | | | [illegible] | | | | |
| [illegible] | [illegible] | | | | | [illegible] | | | | | [illegible] | | | | |
| [illegible] | [illegible] | | | | | [illegible] | | | | | [illegible] | | | | |

* [illegible]

| DATE | 9/11/15 | | | | 9/11/15 | | | | 9/11/15 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| [illegible] | 10/15 | | | | 10/15 | | | | 10/15 | | | |
| [illegible] | [illegible] | | | | [illegible] | | | | [illegible] | | | |
| [illegible] | [illegible] | | | | [illegible] | | | | [illegible] | | | |
| [illegible] | [illegible] | | | | [illegible] | | | | [illegible] | | | |
| [illegible] | [illegible] | | | | [illegible] | | | | [illegible] | | | |
| [illegible] | [illegible] | | | | [illegible] | | | | [illegible] | | | |
| | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| TEMP °C | [illegible] | | | | [illegible] | | | | [illegible] | | | |
| [illegible] | [illegible] | | | | [illegible] | | | | [illegible] | | | |
| [illegible] | [illegible] | | | | [illegible] | | | | [illegible] | | | |
| [illegible] | [illegible] | | | | [illegible] | | | | [illegible] | | | |
| [illegible] | [illegible] | | | | [illegible] | | | | [illegible] | | | |
| [illegible] | [illegible] | | | | [illegible] | | | | [illegible] | | | |
| [illegible] | [illegible] | | | | [illegible] | | | | [illegible] | | | |
| [illegible] | [illegible] | | | | [illegible] | | | | [illegible] | | | |
| [illegible] | [illegible] | | | | [illegible] | | | | [illegible] | | | |
| [illegible] | [illegible] | | | | [illegible] | | | | [illegible] | | | |
| [illegible] | [illegible] | | | | [illegible] | | | | [illegible] | | | |
| [illegible] | [illegible] | | | | [illegible] | | | | [illegible] | | | |
| [illegible] | [illegible] | | | | [illegible] | | | | [illegible] | | | |

| DATE | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| [illegible] | | | | | | | | | | | | | | | | |
| [illegible] | | | | | | | | | | | | | | | | |
| [illegible] | | | | | | | | | | | | | | | | |
| [illegible] | | | | | | | | | | | | | | | | |
| [illegible] | | | | | | | | | | | | | | | | |
| [illegible] | | | | | | | | | | | | | | | | |
| | [illegible] | | | | | | | | | | | | | | | |
| TEMP °C | | | | | | | | | | | | | | | | |
| D.O. MG/L | | | | | | | | | | | | | | | | |
| pH | | | | | | | | | | | | | | | | |
| ALKALINITY MG/L | | | | | | | | | | | | | | | | |
| SUSP. SOLIDS MG/L | | | | | | | | | | | | | | | | |
| BOD TOTAL MG/L | | | | | | | | | | | | | | | | |
| BOD SOL. MG/L | | | | | | | | | | | | | | | | |
| ALGAL ASSAY | | | | | | | | | | | | | | | | |
| [illegible] | | | | | | | | | | | | | | | | |
| [illegible] | | | | | | | | | | | | | | | | |
| [illegible] | | | | | | | | | | | | | | | | |
| [illegible] | | | | | | | | | | | | | | | | |
| [illegible] | | | | | | | | | | | | | | | | |
| [illegible] | | | | | | | | | | | | | | | | |
| [illegible] | | | | | | | | | | | | | | | | |
| [illegible] | | | | | | | | | | | | | | | | |

| DATE | [illegible] | | | | | [illegible] | | | | | [illegible] | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| [illegible] | [illegible] | | | | | [illegible] | | | | | [illegible] | | | | |
| [illegible] | Clear | | | | | Cloudy | | | | | Clear | | | | |
| [illegible] | [illegible] | | | | | [illegible] | | | | | [illegible] | | | | |
| [illegible] | [illegible] | | | | | [illegible] | | | | | [illegible] | | | | |
| [illegible] | [illegible] | | | | | [illegible] | | | | | [illegible] | | | | |
| [illegible] | [illegible] | | | | | [illegible] | | | | | [illegible] | | | | |
| | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF |
| TEMP °C | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| DO MG/L | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| pH | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| ALKALINITY MG/L | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| SUSP SOLIDS MG/L | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| BOD TOTAL MG/L | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| BOD SOL MG/L | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| ALGAL [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| *[illegible] COLIFORM [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| *[illegible] | | | | | | | | | | | | | | | |
| [illegible] MG/L | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] MG/L | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] MG/L | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| COD TOTAL MG/L | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| COD SOL MG/L | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| TKN MG/L | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| TOTAL N MG/L | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |

* [illegible] TOTAL COLIFORM [illegible]

| DATE | 7/7/75 | | | | 7/8/75 | | | | 7/9/75 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AVERAGE FLOW MGD | 4.5/5 | | | | 4.5/5 | | | | 4.5/5 | | | |
| WEATHER | cloudy | | | | cloudy | | | | cloudy | | | |
| CHLORINE MG | 0.184 | | | | 0.184 | | | | 0.184 | | | |
| EFFLUENT MG | 0.119 | | | | 0.119 | | | | 0.119 | | | |
| CHLOR DOSE MG/L | 7.7 | | | | 10.4 | | | | 7.7 | | | |
| CHLOR DOSE MG/L | 2.0 | | | | 2.0 | | | | 2.0 | | | |
| | INF 1 | 2 | 3 | EFF | INF 1 | 2 | 3 | EFF | INF 1 | 2 | 3 | EFF |
| TEMP °C | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 |
| DO MG/L | 4.4 | 4.4 | 3.3 | 3.3 | 3.3 | 4.4 | 4.1 | 3.8 | 3.3 | 3.3 | 4.4 | 4.4 |
| PH | 6.8 | 6.9 | 7.0 | 7.1 | 6.7 | 6.7 | 6.8 | 7.0 | 6.9 | 6.9 | 6.9 | 7.1 |
| ALKALINITY MG/L | 104 | 104 | 101 | 99 | 103 | 99 | 104 | 104 | 103 | 101 | 101 | 103 |
| SUSP SOLIDS MG/L | 18 | 20 | 13 | 13 | 18 | 18 | 18 | 13 | 18 | 18 | 16 | 20 |
| BOD TOTAL MG/L | 18 | 20 | 18 | 18 | 18 | 18 | 17 | 9 | 18 | 18 | 18 | 18 |
| BOD SOL MG/L | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 8 | 8 | 9 | 18 | 18 |
| ALGAL FV x 10³ | — | 118 | 178 | 98 | 18 | — | 198 | 18 | 18 | 198 | 198 | 198 |
| FECAL COLI/100ML x 10³ | 8.8 | 18 | 18 | 18 | 18 | 8.8 | 18 | 18 | 18 | 18 | 18 | 18 |
| AMPN SOL MG x 10³ | | | | | | | | | | | | |
| NH3-N MG/L | 18.8 | 18.8 | 18.8 | 9.8 | 8.8 | 18.8 | 18.8 | 18.8 | 9.8 | 18.8 | 18.8 | 18.8 |
| NO3-N MG/L | 18.1 | 18.1 | 18.1 | 18.1 | 0.8 | 18.1 | 18.1 | 18.1 | 18.1 | 0.8 | 18.1 | 18.1 |
| NO2-N MG/L | 18.1 | 18.1 | 18.1 | 0.1 | 0.1 | 18.1 | 18.1 | 18.1 | 0.1 | 0.1 | 18.1 | 18.1 |
| COD TOTAL MG/L | 198 | 118 | 118 | 118 | 118 | 198 | 118 | 118 | 118 | 118 | 118 | 118 |
| COD SOL MG/L | 98 | 198 | 98 | 98 | 98 | 98 | 118 | 98 | 98 | 98 | 98 | 98 |
| TKN MG/L | 18.8 | 18.8 | 18.8 | 8.8 | 18.8 | 18.8 | 18.8 | 18.8 | 18.8 | 18.8 | 18.8 | 18.8 |
| TOTAL P MG/L | 8.8 | 18 | 8.8 | 8.8 | 8.8 | 8.8 | 18 | 8.8 | 8.8 | 8.8 | 8.8 | 8.8 |

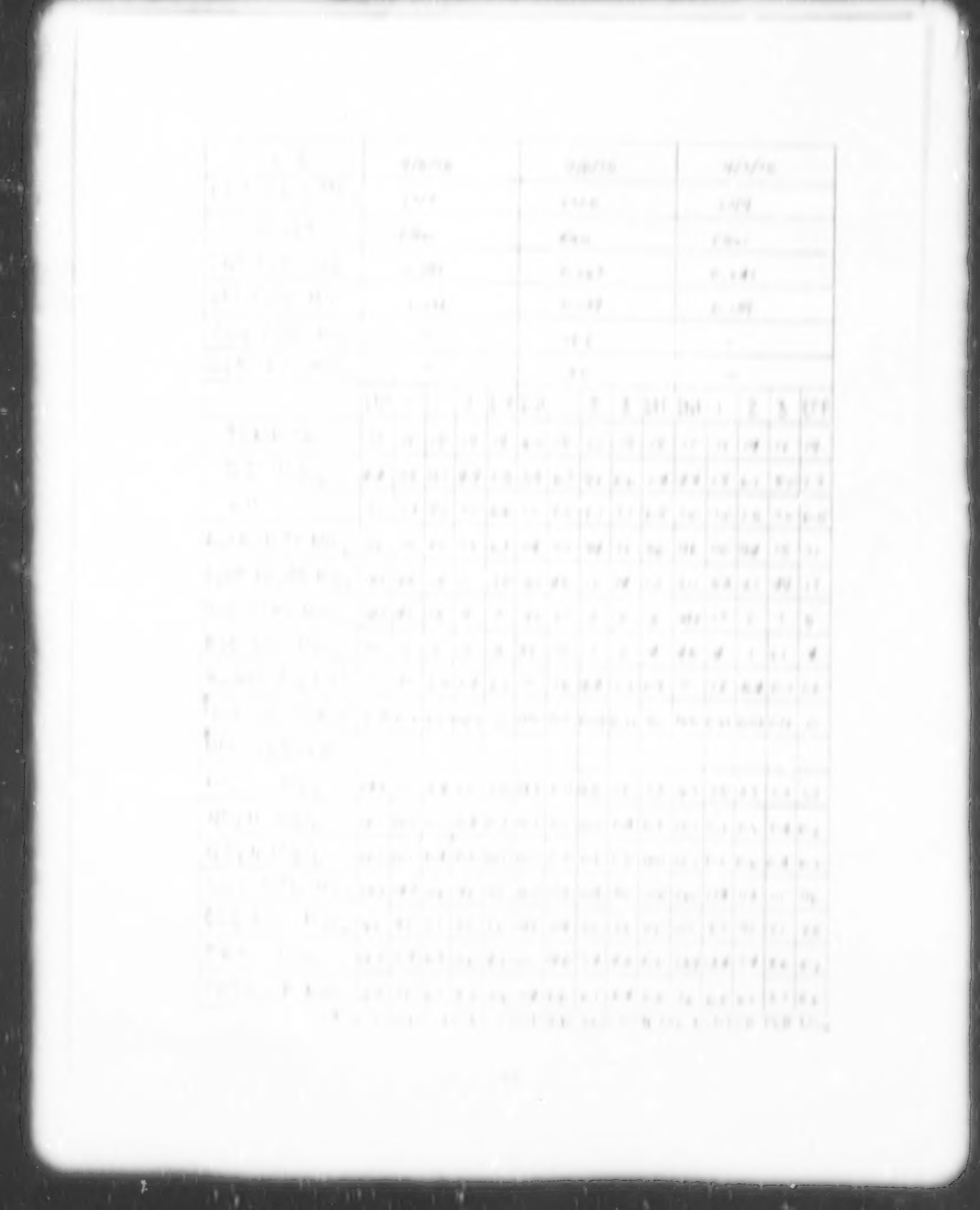
* EFFLUENT FECAL COLIFORM ARE MPN PER 100 ML

| DATE | [illegible] | [illegible] | [illegible] |
|---|---|---|---|
| [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] |
| TEMP °C | [illegible] | [illegible] | [illegible] |
| DO mg/L | [illegible] | [illegible] | [illegible] |
| pH | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] |

* [illegible]

| DATE | [illegible] | | | | | [illegible] | | | | | [illegible] | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AIR FLOW [illegible] | [illegible] | | | | | [illegible] | | | | | [illegible] | | | | |
| WEATHER | [illegible] | | | | | [illegible] | | | | | Partly cloudy | | | | |
| [illegible] MG | [illegible] | | | | | [illegible] | | | | | [illegible] | | | | |
| EFF [illegible] MG | [illegible] | | | | | [illegible] | | | | | [illegible] | | | | |
| [illegible] MG/L | [illegible] | | | | | [illegible] | | | | | [illegible] | | | | |
| [illegible] MG/L | [illegible] | | | | | [illegible] | | | | | [illegible] | | | | |
| | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF |
| TEMP °C | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| D.O. MG/L | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| pH | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| ALKALINITY MG/L | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| SUSP SOLIDS MG/L | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| BOD TOTAL MG/L | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| BOD SOL MG/L | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| ALGAE [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| *FECAL COLI [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| *MPN [illegible] | | | | | | | | | | | | | | | |
| $NH_3$-N MG/L | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| $NO_2$-N MG/L | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| $NO_3$-N MG/L | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| COD TOTAL MG/L | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| COD SOL MG/L | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| TKN MG/L | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| TOTAL P MG/L | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |

* EFFLUENT FECAL COLIFORM AND MPN [illegible]



| DATE | [illegible] | | | | | [illegible] | | | | | [illegible] | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DET. TIME [illegible] | [illegible] | | | | | [illegible] | | | | | [illegible] | | | | |
| [illegible] | [illegible] | | | | | [illegible] | | | | | [illegible] | | | | |
| INF. FLOW MG | [illegible] | | | | | [illegible] | | | | | [illegible] | | | | |
| EFF. FLOW MG | [illegible] | | | | | [illegible] | | | | | [illegible] | | | | |
| $Cl_2$ DOSE MG/L | [illegible] | | | | | [illegible] | | | | | [illegible] | | | | |
| $Cl_2$ RESID. MG/L | [illegible] | | | | | [illegible] | | | | | [illegible] | | | | |
| | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF |
| TEMP °C | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| D.O. MG/L | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| pH | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| ALKALINITY MG/L | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| SUSP. SOLIDS MG/L | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| BOD TOTAL MG/L | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| BOD SOL. MG/L | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| ALGAE [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| *[illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| *MPN [illegible] | | | | | | | | | | | | | | | |
| $NH_3$-N MG/L | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| $NO_2$-N MG/L | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| $NO_3$-N MG/L | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| COD TOTAL MG/L | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| COD SOL. MG/L | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| TKN MG/L | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| TOTAL P MG/L | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |

* EFFLUENT TOTAL COLIFORM [illegible]

| DATE | 9/14/78 | | | | | 9/15/78 | | | | | 9/16/78 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AIR TEMP °C | 21 | | | | | 18/13 | | | | | 17/3 | | | | |
| WEATHER | Partly Cloudy | | | | | Clear | | | | | Partly Cloudy | | | | |
| INF FLOW MG | 0.119 | | | | | 0.147 | | | | | 0.168 | | | | |
| EFF FLOW MG | 0.319 | | | | | 0.298 | | | | | 0.300 | | | | |
| CL2 DOSE MG/L | 10.3 | | | | | — | | | | | 9.3 | | | | |
| CL2 RESID MG/L | 3.0 | | | | | — | | | | | 2.0 | | | | |
| | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF |
| TEMP °C | 18 | 18 | 19 | 19 | 19 | 16 | 18 | 18 | 18 | 18 | 19 | 18 | 18 | 18 | 18 |
| DO MG/L | 4.2 | 5.4 | 8.1 | 8.3 | 8.4 | 4.3 | 7.9 | 8.6 | 8.6 | 8.1 | 4.0 | 6.7 | 8.9 | 8.8 | 8.5 |
| PH | 7.0 | 7.1 | 7.0 | 6.9 | 6.8 | 7.1 | 7.1 | 7.1 | 6.9 | 6.8 | 7.3 | 7.3 | 7.0 | 7.0 | 6.8 |
| ALKALINITY MG/L | 92 | 118 | 101 | 91 | 76 | 109 | 116 | 100 | 91 | 76 | 108 | 116 | 100 | 93 | 78 |
| SUSP SOLIDS MG/L | 161 | 64 | 12 | 11 | 6 | 130 | 56 | 15 | 8 | 5 | 151 | 57 | 6 | 1 | 1 |
| BOD TOTAL MG/L | 166 | 19 | 6.1 | 6.1 | 3 | 136 | 14 | 11 | 9 | 8 | 117 | 15 | 12 | 8 | 6 |
| BOD SOL MG/L | 61 | 11 | 6.1 | 6.1 | 6.1 | 59 | 9 | 8 | 8 | 6 | 69 | 10 | 9 | 8 | 7 |
| ALGAE #/L x10³ | — | 11 | 99 | 0.3 | 0.8 | — | 18 | 4.4 | 0.9 | 0.9 | — | 14 | 1.8 | 0.1 | 0.8 |
| FECAL COLI/100 ML* | 28x | 110 | 0.01 | 0.01 | 0 | 28x | 0.01 | 0.01 | 0.01 | 0 | 6.0 | 0.10 | 0.01 | 0.10 | 0 |
| TURB JCU ML x10³ | | | | | | | | | | | | | | | |
| $NH_3$-N MG/L | 11.6 | 10.9 | 6.7 | 5.8 | 5.6 | 10.7 | 11.1 | 7.1 | 5.5 | 5.6 | 12.0 | 10.9 | 7.5 | 5.5 | 5.7 |
| $NO_3$-N MG/L | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 1.6 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| $NO_2$-N MG/L | 0.1 | 0.4 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.5 | 0.1 | 0.1 | 0.1 |
| COD TOTAL MG/L | 316 | 191 | 103 | 93 | 90 | 310 | 190 | 101 | 98 | 98 | 282 | 183 | 111 | 97 | 90 |
| COD SOL MG/L | 100 | 97 | 99 | 99 | 95 | 94 | 96 | 90 | 93 | 99 | 100 | 99 | 93 | 99 | 95 |
| TKN MG/L | 14.0 | 14.9 | 10.6 | 6.7 | 6.0 | 13.0 | 10.0 | 11.0 | 6.5 | 6.9 | 14.6 | 13.7 | 11.5 | 6.7 | 6.6 |
| TOTAL P MG/L | 9.9 | 7.6 | 6.6 | 6.9 | 6.8 | 9.1 | 6.7 | 6.7 | 6.1 | 6.1 | 9.0 | 6.6 | 6.5 | 6.9 | 6.7 |

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML

| DATE | 9/17/15 | | | | | 9/18/15 | | | | | 9/19/15 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| [illegible] | 14/8 | | | | | 14/1 | | | | | — | | | | |
| [illegible] | cloudy Rain | | | | | cloudy Fog | | | | | cloudy | | | | |
| [illegible] | 0.188 | | | | | 0.181 | | | | | 0.188 | | | | |
| [illegible] | 0.169 | | | | | 0.163 | | | | | 0.179 | | | | |
| [illegible] | 9.1 | | | | | 7.9 | | | | | 9.1 | | | | |
| [illegible] | 1.0 | | | | | 1.5 | | | | | 1.0 | | | | |
| | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF |
| TEMP °C | 9 | 15 | 15 | 15 | 9 | 14 | 15 | 15 | 15 | 14 | 8.5 | 9 | 9 | 10 | 9 |
| DO MG/L | 3.1 | 1.3 | 1.3 | 1.9 | 1.1 | 0.3 | 0.1 | 0.6 | 0.3 | 0.0 | 0.4 | 1.4 | 0.1 | 0.5 | 0.3 |
| pH | 7.3 | 7.3 | 7.1 | 7.1 | 6.4 | 7.3 | 7.4 | 7.3 | 7.0 | 6.7 | 7.3 | 7.3 | 7.1 | 6.7 | 6.6 |
| ALKALINITY MG/L | 108 | 117 | 117 | 58 | 35 | 109 | 120 | 108 | 55 | 33 | 110 | 119 | 117 | 59 | 35 |
| SUSP SOLIDS MG/L | 131 | 68 | 8 | 1 | 1 | 169 | 89 | 11 | 2.1 | 2 | 95 | 81 | 5.3 | 1 | 1 |
| BOD TOTAL MG/L | 149 | 41 | 8 | 6 | 8 | 152 | 33 | 10 | 6 | 7 | 139 | 33 | 11 | 6 | 9 |
| BOD SOL MG/L | 87 | 8 | 1 | 1 | 3 | 58 | 7 | 3 | 0 | 5 | 83 | 9 | 8 | 3 | 6 |
| ALGAL AV. x 10⁶ | — | 1.3 | 0.6 | 0.3 | 0.2 | — | 1.7 | 0.7 | 0.5 | 0.0 | — | 1.3 | 0.9 | 1.1 | 1.0 |
| †FECAL COLIF. /100 ML | 24 x 10⁶ | 0.10 | 100 | 0.17 | 0 | 28 x 10⁶ | 1.3 | 0.10 | 0.14 | 0 | 19 x 10⁶ | 1.8 | 0.14 | 0.19 | 0 |
| †MPN /100 ML x 10⁶ | | | | | | | | | | | | | | | |
| NH3-N MG/L | 14.6 | 0.1 | 0.1 | 0.8 | 0.1 | 11.0 | 11.6 | 1.3 | 0.0 | 0.6 | 14.4 | 0.3 | 1.9 | 0.1 | 0.1 |
| NO3-N MG/L | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.3 | 0.1 | 0.1 | 0.1 | 0.1 | 0.4 | 0.1 | 0.1 | 0.1 |
| NO2-N MG/L | 0.1 | 0.3 | 0.3 | 0.1 | 0.1 | 0.1 | 0.3 | 0.3 | 0.1 | 0.1 | 0.1 | 0.1 | 0.3 | 0.1 | 0.1 |
| COD TOTAL MG/L | 316 | 167 | 100 | 99 | 91 | 346 | 199 | 93 | 91 | 96 | 276 | 180 | 121 | 93 | 93 |
| COD SOL MG/L | 139 | 93 | 111 | 78 | 66 | 181 | 93 | 99 | 91 | 99 | 125 | 91 | 93 | 93 | 93 |
| TKN MG/L | 16.6 | 13.6 | 10.3 | 7.1 | 3.0 | 14.9 | 11.0 | 1.6 | 1.3 | 1.0 | 16.6 | 13.1 | 11.3 | 7.1 | 4.9 |
| TOTAL P MG/L | 3.6 | 3.0 | 4.3 | 3.9 | 4.1 | 3.8 | 3.4 | 4.3 | 3.9 | 3.9 | 3.6 | 3.3 | 3.8 | 4.9 | 3.6 |

* [illegible] TOTAL COLIF AND MPN ARE NUMBER PER 100 ML

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| DATE | 9/10/78 | | | | | 9/11/78 | | | | | 9/12/78 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AIR TEMP °C MAX MIN | - | | | | | 36/1 | | | | | 35/? | | | | |
| WEATHER | Cloudy | | | | | Partly Cloudy | | | | | Partly Cloudy | | | | |
| INF FLOW MG | 0.170 | | | | | 0.193 | | | | | 0.156 | | | | |
| EFF FLOW MG | 0.181 | | | | | 0.209 | | | | | 0.182 | | | | |
| CL2 DOSE MG/L | 9.7 | | | | | 9.3 | | | | | 9.6 | | | | |
| CL2 RESIDUAL MG/L | 1.0 | | | | | 1.0 | | | | | 1.0 | | | | |
| | INF | | 2 | 3 | EFF | CLR | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF |
| TEMP °C | 19 | 19 | 19 | 18 | 18 | 19 | 19 | 19 | 18 | 18.5 | 17 | 17 | 17 | 17 | 17 |
| DO MG/L | 9.0 | 12.0 | 0.9 | 0.6 | 0.5 | 1.8 | 10.6 | 0.9 | 0.6 | 0.5 | 1.8 | 9.9 | 0.9 | 0.8 | 0.8 |
| pH | 7.3 | 9.0 | 7.0 | 6.8 | 6.6 | 7.8 | 9.8 | 7.0 | 6.8 | 6.6 | 7.0 | 7.3 | 7.1 | 6.9 | 6.8 |
| ALKALINITY MG/L | 180 | 118 | 108 | 98 | 98 | 189 | 117 | 108 | 98 | 99 | 118 | 118 | 107 | 98 | 98 |
| SUSP SOLIDS MG/L | 187 | 92 | 9 | 6 | 8 | 85 | 15 | 12 | 8 | 7 | 100 | 61 | 8 | 9 | 8 |
| BOD TOTAL MG/L | 116 | 51 | 8 | 8 | 8 | 19 | 18 | 8 | 8 | 8 | 96 | 81 | 9 | 8 | 9 |
| BOD SOL MG/L | 8.8 | 4.1 | 4.1 | 4.1 | 4 | 7 | 1 | 4.1 | 4.1 | 4.1 | 18 | 8 | 8 | 8 | 8 |
| ALGAL /ML x $10^4$ | — | 3.5 | 1.6 | 1.6 | 1.7 | — | 2.9 | 1.1 | 1.7 | 1.1 | — | 3.8 | 1.8 | 1.5 | 1.1 |
| FECAL COLI/100ML x $10^3$ | 98.0 | 1.8 | 0.36 | 0.18 | 0 | 96 | 1.6 | 0.16 | 0.18 | 0 | 99.0 | 0.36 | 0.14 | 0.96 | 1 |
| MPN /100ML x $10^4$ | | | | | | | | | | | | | | | |
| $NH_3$-N MG/L | 32.0 | 18.6 | 9.1 | 8.1 | 8.1 | 30.0 | 11.9 | 9.9 | 8.1 | 8.1 | 33.0 | 11.1 | 9.6 | 8.6 | 8.9 |
| $NO_3$-N MG/L | 40.1 | 40.1 | 0.9 | 40.1 | 40.1 | 40.1 | 40.1 | 40.1 | 40.1 | 40.1 | 40.1 | 40.1 | 8.1 | 40.1 | 40.1 |
| $NO_2$-N MG/L | 0.1 | 40.1 | 0.1 | 40.1 | 40.1 | 40.1 | 40.1 | 40.1 | 40.1 | 40.1 | 40.1 | 40.1 | 0.1 | 0.1 | 0.1 |
| COD TOTAL MG/L | 395 | 206 | 105 | 98 | 101 | 118 | 193 | 108 | 98 | 96 | 191 | 106 | 107 | 97 | 99 |
| COD SOL MG/L | 109 | 83 | 97 | 78 | 88 | 86 | 98 | 91 | 78 | 84 | 83 | 89 | 78 | 91 | 91 |
| TKN MG/L | 40.8 | 23.4 | 11.8 | 9.0 | 9.9 | 36.6 | 20.1 | 18.0 | 11.9 | 9.6 | 38.1 | 17.8 | 10.8 | 9.1 | 9.9 |
| TOTAL P MG/L | 9.6 | 6.9 | 6.7 | 6.0 | 6.1 | 8.8 | 7.6 | 6.7 | 6.1 | 6.1 | 8.6 | 7.1 | 6.8 | 6.9 | 6.8 |

* EFFLUENT FECAL COLI DUE TO N/A NOT ENOUGH FOR MPN

| DATE | 9/26/78 | | | | | 9/27/78 | | | | | 9/28/78 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| START/FINISH TIME | 13/18 | | | | | 14/11 | | | | | 14/19 | | | | |
| WEATHER | Rain | | | | | Rain | | | | | Rain | | | | |
| INF FLOW MG | 0.169 | | | | | 0.169 | | | | | 0.328 | | | | |
| EFF FLOW MG | 0.336 | | | | | 0.321 | | | | | 0.304 | | | | |
| $Cl_2$ DOSE MG/L | 9.6 | | | | | 9.1 | | | | | 9.9 | | | | |
| $Cl_2$ RESIDUAL MG/L | 2.0 | | | | | 2.0 | | | | | 2.6 | | | | |
| | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF |
| TEMP °C | 16 | 19 | 14 | 17 | 17 | 16 | 17 | 13 | 13 | 13 | 17 | 16 | 16 | 15 | 16 |
| DO MG/L | 1.8 | 7.1 | 1.8 | 0.8 | 0.6 | 0.3 | 5.8 | 0.5 | 0.4 | 0.3 | 3.5 | 1.9 | 0.9 | 0.4 | 0.4 |
| pH | 7.1 | 7.6 | 6.9 | 6.9 | 6.8 | 7.1 | 7.2 | 6.9 | 6.9 | 6.8 | 7.1 | 7.1 | 7.0 | 6.9 | 6.6 |
| ALKALINITY MG/L | 138 | 130 | 110 | 85 | 74 | 118 | 119 | 106 | 90 | 80 | 142 | 118 | 111 | 85 | 74 |
| SUSP SOLIDS MG/L | 108 | 54 | 8 | 7 | 10 | 185 | 89 | 6 | 98 | 8 | 100 | 58 | 8 | 11 | 7 |
| BOD TOTAL MG/L | 118 | 34 | 9 | 6 | 7 | 139 | 27 | 10 | 10 | 6 | 168 | 39 | 13 | 11 | 6 |
| BOD, SOL MG/L | 43 | 11 | 8 | 6 | 6 | 93 | 13 | 8 | 5 | 3 | 83 | 13 | 8 | 5 | 5 |
| ALGAE, /ML x $10^3$ | — | 61 | 1.8 | 0.9 | 1.0 | — | 33 | 0.9 | 0.9 | 0.9 | — | 39 | 3.3 | 1.6 | 1.8 |
| *FECAL COLI/100ML x $10^3$ | 370 | 0.36 | 0.18 | 0.16 | 0 | 7.5 | 1.08 | 0.11 | 0.080 | 0 | 330 | 390 | 1.08 | 0.59 | 0 |
| *MPN /100 ML x $10^3$ | | | | | | | | | | | | | | | |
| $NH_3$-N, MG/L | 28.5 | 11.6 | 3.3 | 0.8 | 0.6 | 29.1 | 11.3 | 3.9 | 0.6 | 0.6 | 30.8 | 13.5 | 9.1 | 0.6 | 0.4 |
| $NO_3$-N, MG/L | 0.01 | 0.01 | 0.1 | 0.01 | 0.01 | 0.01 | 0.01 | 0.6 | 0.01 | 0.01 | 0.01 | 0.6 | 0.4 | 0.01 | 0.01 |
| $NO_2$-N, MG/L | 0.1 | 0.8 | 0.6 | 0.1 | 0.1 | 0.1 | 0.2 | 0.3 | 0.1 | 0.1 | 0.1 | 0.01 | 0.3 | 0.01 | 0.01 |
| COD TOTAL MG/L | 428 | 187 | 106 | 92 | 96 | 299 | 132 | 108 | 103 | 96 | 373 | 110 | 98 | 100 | 101 |
| COD SOL. MG/L | 181 | 89 | 84 | 79 | 84 | 183 | 87 | 83 | 81 | 88 | 169 | 88 | 83 | 79 | 84 |
| TKN MG/L | 36.0 | 19.1 | 11.6 | 8.1 | 8.3 | 31.3 | 18.0 | 11.9 | 11.0 | 8.0 | 36.8 | 17.9 | 11.3 | 8.0 | 8.0 |
| TOTAL P MG/L | 10.1 | 7.1 | 6.7 | 6.1 | 6.3 | 10.1 | 7.1 | 6.7 | 6.3 | 5.9 | 8.6 | 6.3 | 6.3 | 5.6 | 6.1 |

* EFFLUENT FECAL COLIFORM AND MPN ARE AVERAGE PER DAY

| DATE | 9/26/78 | | | | | 9/27/78 | | | | | 9/28/78 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AIR TEMP °C MAX/MIN | 18/11 | | | | | 16/8 | | | | | 20/12 | | | | |
| WEATHER | — | | | | | cloudy | | | | | partly cloudy | | | | |
| INF FLOW MG | 0.375 | | | | | 0.899 | | | | | 0.518 | | | | |
| EFF FLOW MG | 0.317 | | | | | 0.811 | | | | | 0.386 | | | | |
| $Cl_2$ DOSE: MG/L | 9.8 | | | | | — | | | | | 9.0 | | | | |
| $Cl_2$ RESIDUAL: MG/L | 2.0 | | | | | — | | | | | 2.0 | | | | |
| | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF |
| TEMP °C | 16 | 16 | 15 | 15 | 15 | 16 | 15 | 15 | 15 | — | 16 | 15 | 15 | 15 | 15 |
| DO MG/L | 0.5 | 0.9 | 1.0 | 1.0 | 0.8 | 6.7 | 5.0 | 1.9 | 0.5 | — | 5.0 | 8.0 | 2.5 | 0.2 | 0.2 |
| PH | 7.0 | 7.1 | 7.2 | 6.9 | 6.7 | 6.2 | 7.1 | 6.1 | 6.8 | — | 6.7 | 7.5 | 6.9 | 6.9 | 6.5 |
| ALKALINITY MG/L | 98 | 117 | 109 | 94 | 98 | 81 | 103 | 105 | 91 | — | 62 | 105 | 107 | 77 | 75 |
| SUSP SOLIDS MG/L | 159 | 36 | 8 | 13 | 7 | 393 | 59 | 8 | 9 | — | 140 | 59 | 7 | 9 | 9 |
| BOD TOTAL MG/L | 118 | 51 | 10 | 9 | 8 | 147 | 20 | 9 | 8 | — | 93 | 30 | 13 | 10 | 6 |
| BOD SOL MG/L | 81 | 10 | 3 | 5 | 4 | 48 | 9 | 6 | 6 | — | 33 | 8 | 5 | 3 | 4 |
| ALGAE $/ML \times 10^3$ | — | 14 | 3.3 | 1.6 | 1.6 | — | 15 | 12 | 16 | — | — | 57 | 1.2 | 2.6 | 1.2 |
| *FECAL COLI/100ML $\times 10^3$ | 200 | 1.0 | 0.01 | 0.01 | 0 | 220 | 0.1 | 0.09 | 1.0 | — | 5.0 | 3.1 | 0.03 | 1.7 | 10 |
| *MPN /100 ML $\times 10^3$ | | | | | | | | | | | | | | | |
| $NH_3$-N MG/L | 19.6 | 11.6 | 8.6 | 6.8 | 6.9 | 18.0 | 10.8 | 9.1 | 5.5 | — | 7.5 | 9.6 | 8.1 | 6.9 | 6.9 |
| $NO_2$-N MG/L | 0.1 | 0.1 | 1.2 | 0.1 | 0.1 | 0.1 | 0.1 | 1.8 | 0.1 | — | 0.1 | 0.3 | 1.1 | 0.1 | 0.1 |
| $NO_3$-N MG/L | 0.1 | 0.6 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | — | 0.1 | 1.1 | 0.1 | 0.1 | 0.1 |
| COD TOTAL MG/L | 289 | 118 | 98 | 98 | 95 | 599 | 118 | 99 | 91 | — | 189 | 121 | 90 | 93 | 89 |
| COD SOL MG/L | 93 | 89 | 86 | 79 | 83 | 98 | 91 | 90 | 78 | — | 61 | 75 | 80 | 90 | 83 |
| TKN MG/L | 25.6 | 17.9 | 12.3 | 9.1 | 9.3 | 29.3 | 17.5 | 13.5 | 9.6 | — | 9.1 | 10.9 | 11.9 | 9.3 | 9.1 |
| TOTAL P MG/L | 5.0 | 5.9 | 6.0 | 5.9 | 5.9 | 5.5 | 5.5 | 5.6 | 4.7 | — | 4.9 | 5.1 | 4.6 | 5.1 | 4.0 |

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER 100 ML

| DATE | 9/29/78 | | | | | 9/30/78 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AIR TEMP °C PRE. [illegible] | 28°C | | | | | 29/3 | | | | | | | | | |
| WEATHER | clear | | | | | Partly cloudy | | | | | | | | | |
| INF FLOW MG | 0.310 | | | | | 0.360 | | | | | | | | | |
| EFF FLOW MG | 0.340 | | | | | 0.334 | | | | | | | | | |
| $Cl_2$ DOSE-MG/L | 9.0 | | | | | 9.0 | | | | | | | | | |
| $Cl_2$ RESIDUAL MG/L | 3.0 | | | | | 3.0 | | | | | | | | | |
| | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF | INF | 1 | 2 | 3 | EFF |
| TEMP °C | 16 | 14 | 15 | 15 | 15 | 16 | 15 | 15 | 15 | 15 | | | | | |
| DO MG/L | 5.1 | 8.9 | 4.1 | 0.5 | 0.4 | 6.3 | 6.7 | 1.8 | 0.4 | 0.4 | | | | | |
| PH | 6.4 | 7.2 | 6.9 | 6.8 | 6.5 | 6.7 | 7.1 | 7.0 | 6.9 | 6.6 | | | | | |
| ALKALINITY MG/L | 92 | 109 | 101 | 89 | 80 | 89 | 116 | 105 | 84 | 77 | | | | | |
| SUSP SOLIDS MG/L | 113 | 35 | 14 | 13 | 12 | 119 | 30 | 8 | 4 | 8 | | | | | |
| BOD TOTAL MG/L | 106 | 46 | 11 | 11 | 7 | 116 | 16 | 10 | 7 | 7 | | | | | |
| BOD SOL MG/L | 51 | 15 | 9 | 8 | 6 | 51 | 7 | 5 | 4 | 5 | | | | | |
| ALGAE /ML x $10^3$ | — | 11 | 0.9 | 0.9 | 0.5 | — | 17 | 0.6 | 1.6 | 1.6 | | | | | |
| *FECAL COLI/100ML x $10^3$ | 7.3 | 0.4 | 0.08 | 0.01 | 0 | 3.3 | 3.6 | 0.01 | 0.01 | 0 | | | | | |
| *MPN /100 ML x $10^3$ | | | | | | | | | | | | | | | |
| $NH_3$-N, MG/L | 13.6 | 9.3 | 7.6 | 6.6 | 6.9 | 19.5 | 9.8 | 9.0 | 6.2 | 5.2 | | | | | |
| $NO_3$-N, MG/L | 0.1 | 0.1 | 1.0 | 0.1 | 0.1 | 0.1 | 0.1 | 1.0 | 0.1 | 0.1 | | | | | |
| $NO_2$-N, MG/L | 0.1 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 1.1 | 0.5 | 0.1 | 0.1 | | | | | |
| COD TOTAL MG/L | 185 | 89 | 90 | 87 | 84 | 216 | 95 | 86 | 84 | 94 | | | | | |
| COD SOL. MG/L | 89 | 83 | 78 | 73 | 78 | 119 | 78 | 78 | 71 | 73 | | | | | |
| TKN MG/L | 20.8 | 11.8 | 11.5 | 9.5 | 9.6 | 18.0 | 15.0 | 11.9 | 9.5 | 11.1 | | | | | |
| TOTAL P MG/L | 5.6 | 5.1 | 5.9 | 5.4 | 5.6 | 6.9 | 5.8 | 5.6 | 5.3 | 6.0 | | | | | |

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER 100 ML

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## APPENDIX B

## REMARKS AND OBSERVATIONS

| | |
|---|---|
| 11/3 | Accumulated solids in the chlorine contact chamber pumped to pond no. 1. DO in the pond dropped requiring that the influent flow be diverted to pond no. 2 until pond no. 1 could recover. |
| 11/21 | Normal pond sequence resumed. |
| 11/22 | Sample lines freezing at night. |
| 11/23 | Approximately 2 cm (3/4 in) of ice on all ponds at 9:00 A.M. Impossible to use samplers at ponds due to sample lines freezing. For remainder of winter stations 2, 3, and 4 will be grab samples. Stations 1 and 5 (influent and effluent) will continue to be composited. |
| 11/29 | Chlorinator failed for 4 hours (2:30 - 6:30 A.M.) |
| 12/17 | Chlorinator shut off for approximately 2 hours. |
| 2/20 | Chlorinator failure. |
| 2/27 | River backed up into chlorination chamber. |
| 3/12 | Effluent flow rate recorder recalibrated. |
| 3/20-3/25 | River backed up into chlorination chamber. |
| 3/30 | No longer any ice on pond no. 1. |
| 4/4 | Due to high river stage it was not possible to accurately measure the plant effluent flow rate. Overnight the chlorinator was set at 60 lb/day which was increased to 100 lb/day by the operator at 7:30 A.M. to maintain a residual of 2.0 $mg/l$. Pond no. 3 was bypassed so that flow was discharged from pond no. 2. This resulted from operational problems due to the very heavy rain. |
| 4/7 | Pond flow pattern returned to normal. |

| | |
|---|---|
| 4/8 | An accidental oil spill in town caused a discharge of 2700 gallons of No. 2 fuel oil to the sewer system. The oil was trapped in pond no. 1 where it covered approximately 10 percent of the pond surface. |
| 4/10 | Oil spill cleanup company removed oil from pond no. 1. |
| 4/13 | No longer any ice on pond no. 2. |
| 4/16 | No longer any ice on pond no. 3. |
| 7/1 | Pond no. 1 bypassed due to low DO to allow recovery. |
| 7/15 | Flow pattern returned to normal. |
| 8/5 | Chlorinator failure. |
| 8/6 | Chlorinator failure. |
| 9/2 | Chlorinator failure. |
| 9/4 | Chlorinator failure. |
| 9/7 | Chlorinator failure. |
| 9/8 | Chlorinator failure. |
| 9/11 | Chlorinator failure. |
| 9/27 | River stage too high to sample plant effluent. |